FOREWORD

The February 2005 revision (Change 5) of the Corporate Examiner's Guide (CEG) consists of an update to Chapters 201, 202, 203, 308, and 309. Change 5 includes revisions to the Investment (Chapter 201) and Asset and Liability Management (Chapter 202) chapters resulting from Part 704 changes, as well as general updating of the other aforementioned chapters.

As a reminder to those utilizing this manual the CEG remains a guide, not a regulation. The guidance herein is dependable, but may not be the best or final approach in every situation. Examiner judgment and flexibility remain crucial to a successful examination program.

/S/

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Chapter 201

INVESTMENTS

Introduction

Proliferation of new securities and the complexity of instrument structures makes comprehension and analysis of investments increasingly difficult. While financial risks borne by corporate credit unions (corporates) are monitored and controlled at the balance sheet level through a formal ALM process, risks inherent in individual investment assets must be understood in order to have sufficient intuition to identify sources of risk and test appropriateness of the measure of risk for a particular instrument.

Prudent investment portfolio management practices, such as managing concentration risk and maintaining diversification, are as important for corporates as for other investors.

Concentration risk is the risk associated with having excessive exposure to securities that have related market and/or credit risk. Concentration in market risk could include, but is not limited to, excessive exposure to interest rate, basis, embedded option and/or liquidity risks. Concentration in credit risk usually includes excessive exposure to certain industries, groups, or individuals.

Diversification is an investment management technique used to reduce risk without reducing expected return. Diversification theory holds that price volatility can be reduced while achieving a given return by distributing assets more efficiently among a variety of asset classes. Diversification usually reduces the portfolio risk because returns on various asset classes are not perfectly correlated.

Failure to manage concentration risk or adequately diversify the portfolio may give rise to excessive liquidity risk. Corporates must be especially mindful of liquidity when making investment decisions since investment portfolio(s) are the primary source of funds to meet ongoing and contingent liquidity demands.

While it is true the interest rate risk (IRR) of an asset should be viewed in the context of the entire portfolio or balance sheet, an examiner's professional judgment about the source, magnitude and impact of risk begins with an understanding of the risk inherent in individual investment structures. To measure concentrations of interest rate, liquidity, and credit risk, individual investments must be measured accurately and aggregated across all transaction types for analysis and review.

Examiners should ensure corporates "have programs and processes to manage the market, credit, liquidity, legal, operational, and other risks" of investment securities and, where authorized, end-user derivative activities. To this end, Interpretive Ruling and Policy Statement 98-2 (IRPS 98-2) provides helpful guidance covering the broad range of investment instruments permissible for corporate credit unions.

Investment Policies and Procedures

Corporates' investment portfolios vary considerably in size and complexity. Similarly, the number and expertise of each corporate's investment staff and related internal controls varies considerably from corporate to corporate, largely as a function of the size and complexity of the investment portfolio and the corporate's asset size. However, certain minimum infrastructure must exist, dependent upon the risks associated with the type of investment transactions the corporate undertakes. Corporates engaged in the same type of investment transaction(s) must perform similar in-depth and thorough pre- and post-purchase credit and/or IRR analysis, regardless of the corporate's asset size or the size and complexity of the investment portfolio. The existence of compensating internal controls (i.e., ALCO meetings, periodic internal audits of credit and IRR) should not be accepted as a substitute for comprehensive, timely, and professional due diligence and sound internal controls.

Investment policies, procedures, and limits provide the structure for the board to control and the staff to manage investment activities. Section 704.5(a) states: "A corporate credit union must operate according to an investment policy that is consistent with its other risk management policies, including, but not limited to, those related to

credit risk management, asset and liability management, and liquidity management."

An effective investment policy should mandate that senior management has an understanding of the risks and cash flow characteristics of its investments. This is particularly important for products that have unusual, leveraged, or highly variable cash flows. A corporate should not acquire a position in an instrument until the board has a general understanding of the instrument and its impact on the corporate's financial condition and is assured senior management, and all relevant personnel understand and can manage the risks associated with the product.

The board of directors must maintain written policies that clearly outline the approach for managing investments, including financial derivatives. These policies should be consistent with the corporate's broader business strategies, capital adequacy, technical expertise, and general tolerance for market, liquidity, and credit risk.

The policies must identify relevant objectives, constraints, and guidelines for both acquiring investments and managing portfolios. Policies should establish a logical framework for identifying, measuring, monitoring, reporting and controlling the various risks involved in the corporate's investment portfolios, including any financial derivatives.

The policies must clearly articulate the types of permissible investments and derivative contracts to be used to achieve specified objectives. Hence, the corporate's objectives should guide the acquisition of individual investments. There should be established benchmarks for periodically evaluating the performance and effectiveness of investment holdings, strategies, and programs. Whenever multiple objectives are involved, management should prioritize objectives in light of actual or potential conflicts.

Section 704.5(a) requires that an investment policy must address, at a minimum:

1. Appropriate tests and criteria for evaluating investments and investment transactions before purchase; and

2. Reasonable and supportable concentration limits for limited liquidity investments in relation to capital. (Limited liquidity investments are defined as a "private placement or funding agreement.")

Investment personnel typically develop risk tests and selection criteria, and the basic risk analysis for new investments.

Should a corporate lack sufficient infrastructure for engaging in investments of a particular type (ABS, private placements, etc.), examiners should institute a DOR requiring the board of directors to balance the corporate's investment activities with its infrastructure. This may require cessation of certain investment activities until an adequate infrastructure is implemented. Regardless of the corporate's current asset size or operating authority level, infrastructure should be reasonably adequate to manage unanticipated increases in the level of credit and/or IRR that may be brought upon by changing economic conditions.

It is normal practice for the board to delegate investment authority to senior management. Consequently, the board and senior management are responsible for hiring qualified personnel and ensuring adequate procedures are in place for conducting investment activities on both a long-range and day-to-day basis, in accordance with the board's approved investment policy.

There should be clear lines of authority and responsibility in the following areas:

Board responsibilities (authorized through policy):

1. Purchase and sale of investments;
2. Enactment of appropriate limits on risk taking (limits on transaction types and on authorized personnel);
3. Establishment of effective internal controls (both board and internal audit functions); and
4. Enactment of comprehensive risk-reporting and risk-management review processes commensurate with to the corporate's risk profile.

Staff responsibilities (implemented through procedures):

1. Establishment of adequate systems for measuring risk; and
2. Development and implementation of acceptable standards for valuing positions and measuring performance.

Investment Portfolio Strategies

An examiner's evaluation of portfolio risk and return must be coordinated with the ALM review. Specific portfolio management measures are discussed in Chapter 202 (see Setting Financial Goals: The Risk/Return Profile, page 202-2) of this Guide.

The framework for a corporate's investment portfolio risk management process includes:

1. The board establishes a risk tolerance threshold (e.g., Net Economic Value (NEV) limit);
2. The board and ALCO periodically approves a risk target (a benchmark) for management to meet that is within the risk limits; and
3. Management optimizes portfolio performance consistent with risk target levels, in light of current market conditions.

The traditional perspective is spreads must be sufficient to cover the cost of operations and provide capital enhancement. Value-based measures of performance, like NEV, have gained increasing acceptance in recent years. By focusing on total return, institutions manage for long-term value, rather than managing to short-term accounting results.

Many institutions historically focused on earnings-oriented measures of return without adjusting for risk. For example, it was common for corporate portfolios to be managed and evaluated *only* by current net interest spread without relating the risk to equity -- that portion of capital required to support risk between the funding source and the portfolio's assets. Best practice requires all portfolios to have specific capital allocated in light of the portfolio's NEV. A summary of the measures of return performance discussed in Chapter 202 are included on the next page in Table 1.

Table 1

Measures of Return Performance:

A. Earnings-oriented measures
   a. Net interest margin
   b. Core Income
   c. Net Income
   d. Return on assets
   e. Return on equity

B. Market value-oriented measures
   a. Market capitalization
   b. Liquidation value
   c. Going-concern value
   d. Net economic value

C. Both – Total Return

Book of Business Approach

Consistent with an earnings-oriented measure, many corporates allocate investments into discreet portfolios and target net interest spreads. These portfolios will usually have defined parameters on maturity and/or cash-flow behavior and are commonly referred to as "books of business."

The typical strategy focuses on acquiring a discrete pool of investment assets with similar maturity and/or payment characteristics to those of a discrete pool of liabilities.

The terms "matched" and "managed" are used to further describe these portfolios. The term matched generally means a portfolio's assets and liabilities have virtually the same cash flow characteristics and maturity. The term managed generally means a portfolio's assets and liabilities are not required to have identical cash flow characteristics or maturities.

Corporates calculate the net interest margin, or "spread," associated with these books of business by measuring the accounting income from interest bearing assets and subtracting the cost of interest bearing liabilities. This calculation is usually computed for each book and reconciled to total net interest income.

Common books of business may include:

1. Overnight (or Liquidity) Book. Overnight and core shares are used to fund primarily overnight assets. It is not unusual for a corporate to run an intentional maturity mismatch on a small portion of the overnight portfolio by including term assets with floating rate coupons or fixed-rate money market transactions of about 90 days or less.

2. Term Book. Term share certificates are used to fund term investments of substantially similar maturity and payment characteristics. A term book is generally comprised of fully matched transactions with little or no risk to the book's net interest margin.

3. Variable Rate Book. Adjustable-rate share certificates (term) are used to fund a combination of floating and/or adjustable rate assets. The rate paid on the shares is adjustable on a daily, monthly or other periodic setting and is typically set on an ability-to-pay basis. Many variable rate certificates may be linked to a specific index (e.g., LIBOR, Fed Funds Effective, or T-Bills) rather than an administratively determined payout rate. A variable rate book is not necessarily a matched portfolio. Portfolio parameters may permit material basis, embedded option and/or maturity mismatches.

4. Membership Capital Book. Member contributed capital is typically a non-maturity instrument. Assets allocated to this book of business vary, reflecting the risk tolerance of the corporate, and often have a combination of short to intermediate maturities. The rate paid on membership shares is generally administered and set on an ability-to-pay basis.

5. Capital Book. The reserves of the corporate are matched against all interest bearing assets not allocated to other books of business. Since reserves and undivided earnings are not interest bearing, the spread on the capital book is typically expressed as the dollar weighted yield on the assets. Corporates are also permitted to issue paid-in capital shares (PIC) as a supplemental source of capital. The terms and conditions of PIC are unique factors determined at the time of issuance.

A book of business approach can provide an intuitive way to segment total net interest income into individual portfolios and meet regulatory requirements. It does not; however, provide a market-value or future-earnings-at-risk perspective unless NEV is incorporated.

Best practice for performance measurement is on a risk-adjusted basis. Examiners need to encourage that performance reports for spread management strategies include risk adjustments that reflect NEV exposure. This will permit senior management and officials to comprehend the risk-reward tradeoff that has been achieved.

Balance Sheet Risk Measurement

The IRR associated with individual investments and the aggregate IRR associated with an entire portfolio are captured in NEV. It is essential that the portfolio risk be adequately modeled and monitored against pre-established NEV limits to avoid Section 704.8 violations and an unsafe and unsound IRR position. Best practice would require that investment policies and procedures include limits and performance standards for each portfolio.

Examiners should review the established risk targets (NEV and liquidity parameters) for each portfolio and determine whether funds are invested accordingly. If portfolio risk significantly varies from the target, it implies that the board has granted management the discretionary authority to establish its own benchmark. This makes relative performance an increasingly subjective measure for the board to evaluate. It makes more sense for the board to:

1. Establish the level of risk with which it is comfortable (the limits);
2. Approve periodically management's risk target within those limits; and
3. Evaluate the portfolio's performance in light of those targets.

Regardless of the portfolio management approach taken, corporate staff should periodically review the performance and effectiveness of investment portfolio strategies. The review should be conducted no less than quarterly. Corporates with large or highly complex investment portfolios should conduct this review more frequently. The review should evaluate the extent to which the corporate's investments and derivatives are meeting the various objectives, risk tolerance, and guidelines established by corporate policies. Investment reporting prepared for ALCO and the board should include periodic results (risk and return) compared to established performance benchmarks.

Risks Associated With Investment Transactions

The three basic risks assumed by corporates in the investment portfolio are market, liquidity and credit. Interest rate and liquidity risk are defined and discussed in the section of Chapter 202 entitled "Measuring Risk Exposure"(page 202-6).

The board of directors has the ultimate responsibility for the level of risk taken by the corporate. Accordingly, the board should approve overall business strategies and significant policies that govern risk-taking, including those involving investment and derivative contracts. In addition, the board should periodically reevaluate the corporate's business strategies and significant risk-management policies and procedures, placing special emphasis on the corporate's financial objectives and risk tolerances.

The process of measuring, monitoring, and controlling risk within a corporate should be reasonably independent from those individuals having investment transaction authority.

The nature and degree of this independence should be scaled to the size and complexity of a corporate's investment and derivative activities. Corporates with large and complex balance sheets, or with significant portfolios of complex investments, are expected to have risk managers or risk management functions fully independent of individuals who have the authority to conduct transactions. Conversely, corporates with less complex investments (base/base plus authorities) should ensure there is a mechanism for independently reviewing both the level of risk exposures created by investment holdings and the adequacy of the process used in managing those exposures. Depending on the size and nature of the corporate, this review function may be carried out by either management or a board committee.

Regardless of the size and sophistication, corporates should ensure back-office, settlement, and transaction-reconciliation responsibilities are conducted and managed by personnel who are truly independent of those initiating risk-taking positions.

Credit risk is discussed below. These risks must be evaluated on-going to establish and maintain a sound risk-management system.

Credit Risk of Investments

Corporates are somewhat unique as depository institutions because their assets are predominately comprised of investments and they have only nominal amounts of loans outstanding. Part 704 restricts rated investments to those that are investment-grade and significantly limits the amount of credit risk exposure a corporate can assume according to each corporate's expanded authority level. Regardless, credit risk requires formal consideration in the risk management process.

Definition of Credit Risk[1]

> (1) Exposure to loss as a result of default on a debt, swap or some other counterparty instrument. (2) Exposure to loss as a result of a decline in market value stemming from a credit

[1] The Dictionary of Financial Risk Management, Gary L. Gastineau and Mark P. Kritzman, Frank J. Fabozzi Associates, 1996. Page 78.

downgrade of an issuer or counterparty. (3) A component of return variability resulting from the possibility of an event of default. (4) A change in the market's perception of the probability of an event of default (affecting spreads).

NCUA Interpretive Ruling and Policy Statement (IRPS) 98-2[2]

NCUA adopted key elements of the Federal Financial Institution Examination Council (FFIEC) proposed supervisory policy statement on investment securities and derivatives. Some of the key elements of the IRPS are:

1. The institution should not acquire investments or enter into derivative controls without assessing the creditworthiness of the issuer or counterparty.

2. The credit risk arising from these positions should be incorporated into the overall credit risk profile of the institution as comprehensively as practicable.

3. Institutions should be legally required to meet certain quality standards (i.e., investment grade) for security purchases.

4. Institutions should maintain and update ratings reports from at least one nationally recognized statistical rating organization (NRSRO).

5. Institutions should be required to establish limits on individual counterparty exposures. Such limits should define concentrations relating to a single or related issuer or counterparty, a geographical area, or obligations with similar characteristics.

6. In managing credit risk, institutions should consider settlement and pre-settlement risk. These risks are the possibility a counterparty will fail to honor its obligation at or before the time of settlement. The

[2] The NCUA Board passed IRPS 98-2 on April 7, 1998 with an effective date of October 1, 1998.

selection of dealers, investment bankers, and brokers is particularly important in effectively managing these risks.

7. The approval process for banks, broker/dealers, and other counterparties should include a review of each firm's financial statements and an evaluation of its ability to honor its commitments.

8. An inquiry into the general reputation of the broker/dealer is also appropriate. This includes review of information from state or federal securities regulators and industry self-regulatory organizations such as the National Association of Securities Dealers concerning any formal enforcement actions against the dealer, its affiliates, or associated personnel.

9. The board of directors is responsible for supervision and oversight of the investment portfolio and end-user derivative activities, including the approval and periodic review of policies that govern relations with securities dealers.

10. Sound credit risk management requires credit limits be developed by personnel who are as independent as practicable of the acquisition function.

11. In authorizing issuer and counterparty credit lines, these personnel should use standards that are consistent with those used for other activities conducted within the institution and with the organization's overall risk management policies and consolidated exposures.

Effective risk management addresses risks across all types of instruments on an investment portfolio basis and ideally, across the entire institution. Corporates need to recognize the inherent credit risk associated with investment and lending activities and integrate credit risk management with that of market and liquidity risk management. The basic steps set forth by this FFIEC policy statement will help to promote a more effective identification,

measurement, monitoring, reporting, and controlling of the institutions' credit risk.

Sources of Credit Risk

Investments have varying degrees of credit risk depending upon:

1. The risk of the obligor/counterparty; and
2. The structure of the transaction (level of subordination and/or credit enhancements).

Corporates should devote credit analysis resources proportional to the amount of credit risk inherent in the activities authorized by the board. For example, when assessing the risk of default, an unsecured transaction with a lower potential collection rate (like commercial paper or federal funds) should receive more timely credit reviews than a highly secured transaction (like repurchase agreements or asset-backed securities). However, this does not mean transactions with lower credit risk should receive any less attention from the standpoint of market and liquidity risk.

The frequency and depth of credit reviews done by corporates should be driven by the relative degree of credit risk. Credit risk exposure has traditionally been measured by the face or par amount of a transaction since that often is viewed as the total potential loss. However, the actual recovery rate in the event of default will vary from one instrument to the next based upon the priority of the holder's claim and the amount of credit support (enhancements) in the structure. For example, a $10 million repurchase agreement fully secured by U.S. Treasury securities has less credit risk than a $10 million bank Time Deposit ($100,000 FDIC insurance notwithstanding).

Corporates need to make sure each source of credit risk is properly measured, monitored, reported and controlled. Complex investment structures, such as mortgage-backed and asset-backed securities (MBS and ABS), may involve numerous components of credit exposure that need to be tracked on a global basis to ensure all concentrations are identified.

Corporates need to have a clear and consistent methodology for measuring the relative amounts of credit risk inherent in each transaction and make sure these risk measures are aggregated across all transaction types for each entity concerned. Some forms of credit enhancement provided by a single entity, such as private insurance or a letter of credit, may exist in various different securities within the same portfolio.

For example, at the base and base-plus levels, concentration limits are established in Part 704. Part I and Part II authorities (prescribed in Appendix B of Part 704) permit the corporate to set its own limits on certain loan transaction. In establishing expanded authority limits that exceed base and base-plus authorities, it is particularly important that increasingly sophisticated methodologies be used for credit risk measurement.

Table 2 on the next page details instruments, obligors and relative quality (degree of enhancement).

Table 2

Instrument	Obligor/ Counterparty	Maturity	Quality
Sale of Fed Funds	Banks, some Government Sponsored Enterprises (GSEs) (i.e., FHLB)	Typically 1 day.	Unsecured obligations of banks
Negotiable CDs	Banks	Typically 1-6 months, minimum 14 days	Deposits up to $100 K insured by FDIC
Deposit Notes	Banks	Typically 18 months to 5 years	Deposits up to $100 K insured by FDIC
Eurodollars Non-negotiable time deposits Negotiable CDs	Banks: Foreign branches of U.S. banks or foreign banks	Overnight - 5 yrs 1 year or less	Unsecured obligations of banks
Securities Purchased under Agreement to Resell and Securities Sold under Agreement to Repurchase	Broker/dealers, banks	Majority is overnight Typically 1 day to 1 month. Terms may exceed 1 year.	Secured by securities and cash Securities “sold” typically exceed value of cash received
Securities Lending	Broker/dealers, banks	Typically 1 day to 1 month.	Secured by securities and cash
Commercial Paper	Corporations, including bank holding companies, and broker/dealers.	Typically 270 days or less	Unsecured obligations of corporations
Corporate Debentures Notes, Bonds	Corporations	Range from 1 to 30+ years	Unsecured obligations of corporations
MBS and ABS	Corporations, including GSEs, finance companies, bank holding companies, broker/ dealers, bankruptcy remote trusts, and special purpose entities	Original maturities of 1 to 30 years (amortizing assets have WAL < than stated maturity)	Obligations of corporations collateralized by assets including mortgages, real property and receivables
Mutual Funds	Investment company	Open-ended	Pro rata interest in the assets of the fund
U.S. Treasury Securities Bills, Notes, & Bonds	U.S. Government obligation	Up to 1 year 2 to 10 years Over 10 to 30 years	Regarded to be free of default risk
Sovereign Debt	Foreign government obligations	Typically 3 months - 10 years	Highly rated sovereign debt has little or no default risk; very remote cross-border risk (balance of payment problems)
Foreign Bank Deposits	Non-domestic banks	see Eurodollars	Unsecured obligations of banks. Also includes cross-border and center risk (economic/political)

Additional types of instruments, obligors and relative quality (degree of enhancement) are included in Table 3 below.

Table 3

Instrument (cont. from Table 2)	Obligor/ Counterparty	Maturity	Quality
Swaps, Options, Forwards	Typically broker/dealer or bank; may be a special purpose company	Typically 1 month to 5 years (longer expirations exist)	Can be collateralized
Exchange Traded Futures	Organized exchange	1 month to 10 years	Performance bond (margin) and daily mark-to-market
Transaction Risk Purchases/Sales	Broker/dealers, banks	Exposed between trade & settlement	Potential market risk (replacement cost)
Extension of Credit to Members	Natural Person Credit Unions	Typically short-term	Can be collateralized by securities or cash
Settlement Risk	Broker/dealers, banks	Short, not delivery vs. payment (DVP)	Exposed to possibility counterparty may declare bankruptcy prior to completing payment

Credit Risk, NEV, and Liquidity

There is a danger corporates may focus upon high credit ratings and simply consider the improbability of default (i.e., the higher the rating the less the probability of default). This view relates to the first definition of credit risk on page 201-11. Failing to recognize the impact on NEV of credit events other than an event of default ignores a major component of risk. This concept relates to definitions 2 and 4 on page 201-11.

Corporates need to consider credit risk in a mark-to-market framework in order to understand the implications for NEV and liquidity. The volatility of value due to credit events (i.e., defaults, downgrades, or other negative news) can have an adverse affect on a corporate's NEV. As NEV declines, the ability to meet potential liquidity demands diminishes.

Regardless of the accounting treatment, corporates should be cognizant of the effect a change in obligor credit quality (also termed a "migration") will have on fair value. Since corporates have a substantial obligation to address contingent liquidity demands, the impact a change in value has upon liquidity is

significant (Section 704.9). This is true whether the change in value is driven by either market or credit events (or both).

The integral relationship between market and credit risk makes it difficult to fully separate these into independently managed components. As securities migrate down the ratings scale (one rating downgrade followed by another), the tendency is for price volatility to geometrically increase. Prudent risk managers seek to monitor this potential in order to timely immunize or rebalance the portfolio when credit and market risk exposures exceed acceptable targets or limits.

Corporates need to consider how they will quantify and control concentrations (i.e., obligor, industry, type of instrument, etc.) of credit risk and how the risk will change when market and/or credit conditions change. Thus, understanding how changes in credit quality affect value is an important part of managing the corporate's targeted NEV and liquidity levels.

Credit Risk Management

Credit Risk Policies

Credit risk policies may be integrated with a corporate's overall ALM and investment policies. It is not imperative credit risk policies be stand-alone, but corporates with increasing levels of expanded authority are likely to establish more elaborate guidelines. Section 704.6(a) requires policy to address, at a minimum:

1. The approval process associated with credit limits**.** This implies a formal management process is adopted to develop and ratify any appropriate limits incorporated into policy. The approval process need not be elaborate, but it should be supported by written procedures. Furthermore, the process should be addressed in the scope of the audit and periodically evaluated for compliance purposes.

2. Due diligence analysis requirements**.** Different transactions represent different levels of complexity as well as varying

degrees of risk. Corporates should develop standards and requirements commensurate with exposures. Resource allocation should ensure credit risk evaluations are sufficiently in-depth and timely for each type of material credit risk exposure taken.

3. Maximum credit limits with each obligor and transaction counterparty, set as a percentage of capital**.** The selection and establishment of lines to broker/dealers, banks, and counterparties is particularly important in effectively managing credit risk. A corporate's policy should identify criteria for selecting these organizations and should list all approved firms. The approval process, at a minimum, should include a documented review of each firm's financial statement and an evaluation of its ability to honor its commitments. These reviews should be periodically updated.

4. Concentrations of credit risk (i.e., originator of receivables, insurer, industry type, sector type, and geographic.). Section 704.6 requires the establishment of maximum concentration limits per obligor and counterparty. The corporate should establish and maintain its own limits (within the regulatory parameters) based upon the preferences and risk tolerance of its board, the corporate's operational infrastructure, and overall financial and managerial soundness. A corporate's credit policy should also include guidelines on the quality and quantity of each type of investment that may be held. It should provide credit-risk diversification and concentration limits. Such limits may define concentrations as those of a single or related issuer or counterparty, in a geographical area, or obligations with analogous characteristics. Policies should include procedures for addressing deterioration in credit quality, such as increased monitoring and stop-loss limits.

The policies of the corporate should recognize credit risk as a risk posed by investment and derivative activities. As such, the corporate must operate under a credit risk management policy commensurate with the investment risks and activities it undertakes.

Sound credit-risk management requires credit analysis be conducted by personnel who are independent of the acquisition function.

Analysis and Approval

The process of evaluating credit instruments should be guided by caution. The cost of approving a mistake may outweigh the opportunity loss of rejecting a "good" credit. The introduction of credit risk to the balance sheet should be undertaken with the same care and diligence as all other portfolio risks (commensurate with the exposure).

The credit analysis and approval process should involve substantive and timely information. Prudent due diligence requires sufficient, in-depth analysis be conducted for obligors and counterparties ("credits") considered for approval. The minimum credit ratings and maximum concentration limits set for base and base-plus corporates in Section 704.6 reflect recognition of existing resource constraints within some corporates. Where best practices cannot or will not be employed, exposure to credit risk should be limited to an immaterial percentage of capital.

The more complex the credit or the greater the potential exposure, the more analysis required. Common sources of information an analyst may utilize include financial statements, press releases, rating agency analyses, discussions with company officers and/or rating agency analysts, fixed income and equity research from securities firms and stories in trade publications. Most of these resources will be maintained in the credit file. Section 704.6 requires information remain in a corporate's possession for at least as long as an instrument is in portfolio and until the next examination (if matured or sold between examination reviews).

Examiners should sample credit files to determine the resources utilized. Information should be reasonably current. There should be evidence the analyst(s) is keeping abreast of new developments and that critical developments are shared in the reporting process. Reaction to credit news (also termed "credit events") should be

evidenced in the minutes of ALCO discussion and included in management's risk reports.

The content of credit analysis documentation does not necessarily need to be formal or elaborate. Many analysts make notes directly on the resource materials held in file. Best practice requires an analyst prepare a formal summarization of a credit, with a rationale for its initial approval or reaffirmation, which is signed by the personnel or committee which makes the approval/disapproval decision.

Approval authority should not be superficial. Some institutions simply adopt regulatory limits on types, ratings, and concentrations, and make little effort to consider the appropriateness of establishing different limits. A good manager will set limits tighter than regulatory constraints if such limits express the preference and risk tolerance adopted by the board. This recognizes legality is not an automatic acceptance criterion. Examiners should encourage management not to automatically approve counterparties, obligors, and limits based solely upon prevailing minimum regulatory requirements.

Credit Ratings

A credit rating is an opinion of the general creditworthiness of an obligor, or the creditworthiness of an obligor with respect to a particular debt security or other debt obligation, based upon certain risk factors. Rating agencies provide ratings and research that serve as a valuable tool for investors. However, ratings are not a substitute for prudent due diligence and should only be considered as one factor in an investment decision.

Rating firms recognized by the SEC are known as Nationally Recognized Statistical Rating Organizations (NRSRO). Section 704.6 requires that all debt instruments have a credit rating from at least one NRSRO. The NRSRO used at the time of purchase serves as the source to verify any change in rating (compliance with the minimum regulatory ratings). If management decides to change the NRSRO(s) it uses for monitoring its ratings, it should document this decision and report it to the ALCO.

NRSROs typically issue different ratings for short-term instruments than for long-term instruments. The long-term ratings are the measure of credit quality that is emphasized by most risk managers. Table 4 below includes some rating agencies and their description of long-term ratings.

Table 4 Long-Term Issue Credit Ratings

Rating Agency			
S&P	Fitch	Moody's	Description of S&P Rating*
AAA	AAA	Aaa	(S&P) "An obligation rated 'AAA' has the highest rating assigned by Standard & Poor's. The obligor's capacity to meet its financial commitment on the obligation is EXTREMELY STRONG."
AA	AA	Aa	(S&P) "An obligation rated 'AA' differs from the highest rated obligations only in small degree. The obligor's capacity to meet its financial commitment on the obligation is VERY STRONG."
A	A	A	(S&P) "An obligation rated 'A' is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher rated categories. However, the obligor's capacity to meet its financial commitment on the obligation is still STRONG."
BBB	BBB	Baa	(S&P) "An obligation rated 'BBB' exhibits ADEQUATE protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation."
Gradation Quality			
+	+	1	These symbols used to provide more detailed gradation of quality
		2	
-	-	3	
AA CCC	AA CCC	Aa Caa	Range of ratings for which quality gradations are provided.

BBB- represents the bottom of "investment grade"

* Descriptions related to Standard & Poor's Rating. While agencies tend to use similar definitions, examiners should consult the particular rating agency's description for a precise description of the investment's rating.

The long-term ratings described in Table 5 below are below the minimum ratings permitted in Part 704 for any level of authority for all corporates.

Table 5 Long-Term Issue Credit Ratings

Rating Agency			
S&P	Fitch	Moody's	Description S&P Rating*
"Obligations rated 'BB", 'B', 'CCC', 'CC', and 'C' are regarded as having significant speculative characteristics. 'BB' indicates the least degree of speculation and 'C' the highest. While such obligations will likely have some quality and protective characteristics, these may be outweighed by large uncertainties or major exposures to adverse conditions."			
BB	BB	Ba	(S&P) "An obligation rated 'BB' is LESS VULNERABLE to nonpayment than other speculative issues. However, it faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions which could lead to the obligor's inadequate capacity to meet its financial commitment on the obligation."
B	B	B	(S&P) "An obligation rated 'B' is MORE VULNERABLE to nonpayment than obligations rated 'BB', but the obligor currently has the capacity to meet its financial commitment on the obligation. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitment on the obligation."
CCC	CCC	Caa	(S&P) "An obligation rated 'CCC' is CURRENTLY VULNERABLE to nonpayment, and is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitment on the obligation. In the event of adverse business, financial, or economic conditions, the obligor is not likely to have the capacity to meet its financial commitment on the obligation."
CC	CC	Ca	(S&P) "An obligation rated 'CC' is CURRENTLY HIGHLY VULNERABLE to nonpayment."
C	C	C	(S&P) "The 'C' rating may be used to cover a situation where a bankruptcy petition has been filed or similar action has been taken, but payments on this obligation are being continued."
D	DDD	WR	(S&P) "An obligation rated 'D' is in payment default. The 'D' rating category is used when payments on an obligation are not made on the date due even if the applicable grace period has not expired, unless Standard & Poor's believes that such payments will be made during such grace period.

Speculative grade begins with BB+

	The 'D' rating also will be used upon the filing of a bankruptcy petition or the taking of a similar action if payments on an obligation are jeopardized."

* Descriptions related to Standard & Poor's Rating. While agencies tend to use similar definitions, examiners should consult the particular rating agency's description for a precise description of the investment's rating.

Short term ratings are described in Table 6 below.

Table 6 Short-Term Issue Ratings

Rating Agency			
S&P	Fitch	Moody's	Description of Short-term Rating*
A-1	F-1	P-1	"A short-term obligation rated 'A-1' is rated in the highest category by Standard & Poor's. The obligor's capacity to meet its financial commitment on the obligation is strong. Within this category, certain obligations are designated with a plus sign (+). This indicates that the obligor's capacity to meet its financial commitment on the obligation is extremely strong. "
A-2	F-2	P-2	"A short-term obligation rated 'A-2' is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher rating categories. However, the obligor's capacity to meet its financial commitment on the obligation is satisfactory."
A-3	F-3	P-3	A short-term obligation rated 'A-3 exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation."
B	B	NP (not prime)	"A short-term obligation rated 'B' is regarded as having significant speculative characteristics. The obligor currently has the capacity to meet its financial commitment on the obligation; however, it faces major ongoing uncertainties which could lead to the obligor's inadequate capacity to meet its financial commitment on the obligation."
C	C		"A short-term obligation rated 'C' is currently vulnerable to nonpayment and is dependent upon favorable business, financial, and economic conditions for the obligor to meets its financial commitment on the obligation."
D	D		A short-term obligation rated 'D' is in payment default. The 'D' rating is used when payments on an obligation are not made on

Permissible minimum investment grade (Part 704) (See Expanded Authorities)

Not permissible.

	the date due even if the applicable grace period has not expired, unless Standard & Poor's believes that such payments will be made during such grace period. The 'D' rating also will be used upon the filing of a bankruptcy petition or the taking of a similar action if payments on an obligation are jeopardized."

* Descriptions related to Standard & Poor's Rating. While agencies tend to use similar definitions, examiners should consult the particular rating agency's description for a precise description of the investment's rating.

Corporates should maintain updated ratings reports from one of the major rating services. Individual ratings are usually publicly available, but research reports and news releases are generally obtained through a paid subscription. It is critical that information be obtained as timely as practical. The ratings and other opinions issued by ratings agencies are not recommendations to buy securities and there is not a warranty on the accuracy, timeliness, completeness, or fitness of the information provided. It is simply one tool to assist an investor in making investment decisions.

Management may (but is not required to) use multiple rating agencies. Management should have procedures in place addressing instruments that receive different credit quality ratings from different NRSROs ("split ratings"). Good credit managers will seek to discover reasons behind split ratings on instruments they hold or consider for purchase. Many corporates consider a split rating on a security a criterion for placing it on the credit watchlist. It can signal either a warning (possible deterioration) or an opportunity (possible improvement). Experienced portfolio managers know both circumstances are significant.

Examiners should be alert to whether a corporate is subscribing to multiple rating agencies as a means of "shopping" for a favorable rating. If the corporate's designated NRSRO is different for each bond being purchased, "cherry picking" may be indicated. A review of the supporting analysis should help determine if the analyst is mimicking the most favorable research or if independent judgment is really exercised. Analysts are not expected to possess greater insights than rating agencies, but they are expected to understand the implications and conclusions of the research and form an independent judgment.

Some rating agencies have been slow to alter their credit outlook on an issuer, industry, or region which eventually resulted in substantial credit quality changes (more than one gradation change in credit ratings at one time). Because corporates are limited to the top investment grade scale, large changes in credit quality are a concern since they generally trigger regulatory requirements (Section 704.10 – Investment Action Plans). Credit risk managers must be mindful credit ratings are generally a "lagging" indicator.

Measuring and Monitoring Risk

The credit exposures inherent in corporates' investment activities have multiplied and become more complex as new instruments and debt structures have come to market. Financial products are increasingly complex in part because of the proliferation of credit enhancement mechanisms supporting these instruments. These include, but are not necessarily limited to, third-party guarantees, posted collateral, margin arrangements, credit derivatives, and netting.

With this growth there is an increasing need for more sophisticated risk measurement techniques. The name of an instrument and the par amount of a transaction do not provide a quantitative measure of inherent credit risk. Credit analysts and portfolio managers alike must track the credit features on both a transactional and portfolio basis in order to aggregate and control the various levels of credit exposure to any one obligor, counterparty, insurer, and/or guarantor.

In order for corporates to properly ensure that policies and regulations governing credit risk are adhered, quantitative measures of exposure must be established, measured, monitored, and enforced. Prudent practice dictates that this process must be as independent from the personnel initiating the investment transactions as practical.

Reporting and Documentation

The reporting of credit risk exposures and the supporting documentation (for approvals and monitoring) are key elements of credit risk management. The board, senior management, and other oversight authorities depend upon the quality of reporting to make determinations about the magnitude, compliance, and appropriateness of credit risk exposure. Management and the board cannot fulfill their respective control and oversight responsibilities absent meaningful risk reporting.

The more clear and valid the documentation, the more timely board and senior management can assess the risk and make strategic decisions. The methodologies for measuring credit risk and the formats for reporting credit risk information should be clearly documented in policies and procedures.

Personnel reporting lines are also important. The credit analyst is responsible for tracking the exposures of the corporate, monitoring limits, and reacting to changes in creditworthiness. Senior management is responsible for managing the overall risk posture of the institution; this includes management of aggregate risk exposures. The ALCO and board of directors have a fiduciary responsibility to be aware of the risk assumed by management and be assured that management is actively managing the risk.

The corporate should have strong internal control procedures that ensure the integrity of credit risk information. The degree of information that is automated and the ability of an analyst to maintain current evaluations are other factors that may affect the quality of the credit risk information.

Reacting to Change

One of the reasons a corporate should develop its methodologies for measuring credit risk exposures and set consistent risk-based limits is to engender a risk management culture that appropriately reacts to change. In order for corporates to best manage credit risk exposure, management should be predisposed to take rational and

timely steps towards rebalancing or reducing credit risk in the portfolio as needed.

Credit downgrades result in volatility in instruments' value and liquidity. Management must be able and willing to take corrective action when adverse developments occur. To provide this flexibility, most corporates classify large portions of their securities portfolios as available-for-sale (AFS). Other than divestiture, there are few alternatives available to mitigate deterioration in credit quality.

Administration

Minimum regulatory limits on permissible investments (permissible to buy or hold as collateral) are restricted to high credit quality. A number of these transactions have high credit ratings only because they are supported by collateral or other credit enhancements.

In some cases, the risk of the counterparty would not be acceptable without added credit risk protection. That means managers must closely evaluate and monitor the aspects of the transaction that provide the credit quality. Typical credit enhancement features like collateral, performance margin, or a third-party guarantee are features that should be monitored as part of standard operating procedure. An ongoing review of these enhancements is necessary to identify, measure, monitor and control credit risk.

Collateral administration involves checking the market value, legality and control (perfected security interest) of securities accepted as collateral in investment and borrowing transactions. The integrity of the credit risk measurement process rests, in part, on determining the mark-to-market value of collateral and repurchase securities.

Securities accepted in a repurchase or securities lending transaction should be independently valued by the corporate or an agent separate from the counterparty. Collateral should be checked on an ongoing basis to confirm that it meets policy and repurchase agreement requirements. (Note: This could be required

as often as daily depending on agreements and degree of risk to the portfolio.)

Additionally, monitoring of securities that have inherent credit enhancements is important. For example, surveillance of the underlying receivables on MBS and ABS investments is the responsibility of the credit risk management function. Credit personnel should not view collateral or other structural enhancements as an excuse to ignore the amount of inherent credit risk in a transaction. Despite the fact that credit enhancements increase the potential for a higher rate of collection in an event of default, it also requires more sophisticated measurement and monitoring processes.

An increasingly diverse array of credit features is available to enhance credit quality. Credit managers must actively track these enhancements across the entire portfolio and regularly monitor the amount of exposure to ensure that the credit risk policies of the board are followed.

Investment Products and Practices

Section 704.5(c) of the NCUA Rules and Regulations outlines various investment activities in which corporates may engage. Those investments must be U.S. dollar denominated and subject to the credit policy restrictions set forth in Section 704.6.

In a quality oriented investment culture, investment managers typically view the portfolio selection process as one of exclusion and rejection rather than search and acceptance. These investment managers realize that the penalty for mistakenly rejecting an investment offering probably would not be significant. However, the acceptance of an unsound investment risk could be costly and possibly devastating.

Investment managers with quality oriented investment cultures typically have programs for obtaining and evaluating current information on potential/existing securities in their investment portfolios. Also, these managers only purchase securities from reputable and financially secure dealers.

Table 7: Minimum Credit Ratings at Time of Purchase

Type Investment[1]	Base & Base Plus		Part I		Part II	
	Short	**Long**	**Short**	**Long**	**Short**	**Long**
Investments with Long-Term Ratings		AA-		A-		BBB (flat)
Investments with Short-Term Ratings	A-1		A-2		A-2*	

[1] Assets must be 704-permissible.

*Provided that the issuer has a long-term rating no lower than BBB (flat) (or equivalent) or the investment is a domestically issued asset-backed security.

Authorized investment activities are listed in Part 704 of NCUA Rules and Regulations. Allowable investment products are discussed in reference 11, Comptroller of the Currency's Examiner's Guide to Investment Products and Practices.

Financial Derivatives (Expanded Authority)

Financial Derivatives are broadly defined as instruments that derive their value from the performance of underlying assets, interest or currency exchange rates, or indices.

Since managing financial risks (e.g., market, liquidity, credit, etc.) has become more important to corporates due to the advent of more sophisticated investment products, the use of off-balance sheet products will continue to grow. This section outlines some commonly known off-balance sheet derivative products.

Options

The owner of an option contract has the right to buy or sell a specific asset, at a specific price, on or before a specified date. The party granting the right is referred to as the option seller, or writer, and the party receiving the option is called the option buyer or holder. The seller is obligated to perform on the contract, whereas the purchaser has a right, but not an obligation, to perform on the contract.

A call option gives the buyer the right to purchase the underlying instrument. A put option gives the buyer the right to sell the underlying instrument. Purchasing an option is considered a long position, since the buyer holds the right to exercise. The seller of an option holds a short option position, since the right to exercise has been sold. (See table 7).

The purchaser of a call option expects to profit from the price of the underlying instrument exceeding the strike price, or exercise price, within the life of the contract. The purchase of a put option expects to profit from the price of the underlying instrument declining below the exercise price of the contract just as the short-seller of the underlying benefits from a price decline. The exercise price (or strike price) is the price at which the contract owner has the right to buy or sell the underlying instrument.

Table 8

	Buyer/ Purchaser	**Seller/ Writer**
CALL	Long Call = Long exposure to the underlying security	Short Call = Short exposure to the underlying security
PUT	Long Put = Short exposure to underlying security	Short Put = Long exposure to the underlying security

Swaps

A swap generally is a contract between two counterparties to exchange net cash flows on agreed upon dates, for a specific period of time, on an established notional principal. The payment to one or the other counterparty is the difference between the two cash flows. The contracts are entered into by a swap dealer and a customer (corporate), rather than two customers.

Although swaps are over-the-counter instruments (not traded on the organized exchange), there is a degree of standardization in the contracts since the advent of the International Swap and Derivatives Association (ISDA). Counterparties often form a master swap agreement that establishes the basic language of a swap agreement. However, counterparties may change the master agreement as needed.

The most common type of swap used by corporates is the interest-rate swap. This swap can be broken down into two categories: coupon swap and basis swap. A coupon swap exchanges an interest payment stream of one configuration for another on the same notional principal (e.g., fixed rate for floating rate). A basis swap figures payments on two floating rate indices (e.g., LIBOR for Prime). An interest-rate swap also can be used to lower the corporate's cost of funds by taking advantage of the credit spreads between the fixed and floating rate markets. While it may reduce interest rate risk, a measure of credit and liquidity risk is introduced (it's not likely to be a riskless transaction).

Futures

A futures contract is an obligation to deliver or receive a specified amount of a commodity or financial instrument at a specified price on a specific date in the future. No cash is passed between the buyer and seller at the inception of the contract. Also, futures contracts rarely settle by actual delivery of the underlying; instead, they are offset or cash settled.

Futures contracts are traded on several exchanges in the U.S. and abroad and are available on financial instruments such as government securities and Eurodollar time deposits. The typical use of a futures contract is to hedge the risk of a particular security, portfolio of securities, or as an asset/liability tool to hedge overall balance sheet exposure.

Forwards

A forward contract is a customized obligation to receive or deliver a specified amount of a commodity or security, at a specified price, on a specific date in the future. The terms of the contract are negotiated directly by the counterparties and can be terminated only with the consent of both parties. The contract is sold or bought immediately, but not paid until some future date. This feature, along with the lack of an exchange acting as an intermediary, gives forward contracts credit risk which is not evident in futures contracts.

The most common types of forwards are interest rate forwards and forward rate agreements (FRAs). These are contracts to pay or receive a specified interest rate, at a specified date in the future. An FRA is a single period interest rate swap.

Financial derivatives are discussed in greater detail in Chapter 202, Appendix B, entitled "Derivative Instruments."

Investment and Risk Management Reporting

An accurate, informative, and timely management information system is essential. Examiners should evaluate the adequacy of a corporate's monitoring and reporting of risks, returns, and overall performance of investment and derivative activities to senior management and the board of directors.

Investment reports are typically an integral part of the ALM reporting process since investments represent most of the corporates' assets.

The frequency of reporting should provide responsible individuals with adequate information to judge the changing nature of the corporate's risk profile, and to evaluate compliance with stated policy objectives and restraints.

A clear, concise executive summary format is the best means for communicating complex information in a compressed time setting. Management reports should translate measured risk from technical and quantitative formats to those that can be easily read and understood by senior managers and directors.

The corporate should have a common conceptual framework for measuring and limiting risks in reports to senior managers and directors. These reports should concisely assess and report the performance of investments and portfolios in meeting the corporate's stated objectives.

Security Safekeeping

Listed below are the assignment programs currently in use by corporate credit unions. These programs periodically change. Therefore, the list should not be considered all-inclusive.

The Security Safekeeping Program (SSP):

1. Provides safekeeping services to participating credit unions holding United States Government and Federal Agency Securities.

2. Covers traditional custodial services such as monthly safekeeping reports, coupon and principal collection, and other maintenance services.

Security Liquidity Program (SLP):

Provides participating credit unions a line of credit in an amount which approximates the market value of eligible securities available to the program.

The Reverse Repurchase Transactions (RRT) Program:

1. Involves a reverse repurchase transaction which represents the sale of a security for a "price" with a simultaneous commitment by the seller to repurchase the security at a future date at a specified "price."

2. Invests the interest earned from the proceeds in a corporate or certificate account of equal amount and maturity.

3. Requires Generally Accepted Accounting Principles (GAAP) presentation of income and expense transactions at gross amounts (netting is not permitted).

The Collateral Investments (CI) Program:

1. Allows credit unions to secure their investments in the corporate with United States Government and Federal Agency Securities.

2. "Sells" securities to the investing credit union via a repurchase transaction.

Security Safekeeping Policy: The corporate's investment policy should explicitly detail all authorized methods for safekeeping

securities in-house or with other institutions. Safekeeping controls should be strengthened by the presence of specific procedures which have been designed and implemented to ensure adequate separation of duties and controls. Access control limitations should be similar to systems employed in the wire transfers area.

Safekeeping policies and procedures should be written with risk assessment in mind. "Prevention control" rather than "discovery" should be the underlying theme and objective.

Security Safekeeping Environment: Corporates safekeep their own investments, as well as those of member credit unions, through various service programs.

The "liability limitations" specified in the safekeeping contract and the qualifications of the safekeeping institution (such as its safekeeping experience, financial strength, and internal control strength) are key elements considered when assessing a safekeeping arrangement. Corporates typically safekeep investments through U.S. Central Credit Union (U.S. Central). However, they often have other arrangements with banks, other safekeeping facilities, or the Federal Reserve. While assessing the internal controls of the safekeeping institution is important, evaluating the corporate's assessment of its safekeeping institutions is equally as critical. The impact of an unauthorized security transfer could be similar to that of an unauthorized wire transfer by exposing the corporate to financial and credibility losses. The examiner should ensure compliance with Part 703, NCUA Rules and Regulations.

Internal Risk: Corporates typically attempt to minimize their risk by acting as a "pass through" to outside safekeeping institutions. Contracts, bailment for hire agreements, and procedures for member credit unions are often initiated to control the risk of potential legal liability or loss from a breach of security occurring outside the corporate's walls.

Securities held in street name are more easily transferred and converted to cash. Controls surrounding access to these securities need to be functionally equivalent to wire transfers. Similar to cash, many investments can be transferred using the Fedline II system (wire transfer) or through correspondent banking arrangements.

Other Programs

In addition to corporate network developed programs, the examiner may encounter "non-network" developed programs. Such programs may be developed in-house, by other corporates, or other outside financial entities.

Separation of Duties: Written procedures should describe the securities transfer process and individual responsibilities. Segregation of duties in the movement of securities is a key internal control element. Examiners should ensure adequate segregation of duties is in place over the transfer of corporate and member securities.

The majority of security transfers are affected via U.S. Central. The Corporate Credit Union Network (CCUN) system does not allow for the same level of control as the Fedline system. Like the Fedline II system, requests for securities movement are initiated by electronic means. Access to the CCUN system and its input/ transfer screen (DCHT) is password controlled. The examiner should determine that the CCUN verification function is not disabled.

A corporate utilizing security safekeeping systems should perform ongoing reconciliations (routine and random) throughout the day.

Account Reconciliation: At any time during the day, the corporate should have the ability to identify and document the location of its securities (as well as those of its participating members). The corporate should have the capability of reconciling its position (i.e., inventory/activity, including updated input from the custodian) at any point during the day. Safekeeping policies and procedures should require that a reconciliation of the safekeeping account be performed daily and that all securities in safekeeping (both corporate and member) be reconciled at least monthly to a master data base.

Re-establishment of Controls: The potential risk associated with the lack of control in the safekeeping process is material and immediate. The priority of establishing or reestablishing control of this area must also be immediate.

Summary

The growth and complexity of investment and financial products has changed the risk characteristics within the corporate credit union system. As a result, examiners and credit union personnel must have a thorough understanding and knowledge of the risks within a corporate's investment portfolio. To meet this objective, corporates must have a sound investment portfolio management process in place. This process must include, but not be limited to, sound investment policies and procedures to guide the process, strong management information systems for measuring, monitoring and reporting risk, adequately trained staff, and an independent testing of the overall process for compliance.

Examination Objectives

Investment Review Objectives:

1. Determine if policies, procedures, practices, and internal controls are adequate.

2. Assess the level of competency/qualifications of staff/management.

3. Determine if corporate staff is operating according to established guidelines.

4. Determine the scope and adequacy of the audit functions.

5. Determine the overall quality of the investment portfolio and how that quality relates to the soundness of the corporate.

6. Determine if the corporate is in compliance with applicable laws and regulations.

7. Determine if investments are properly recorded and classified.

8. Initiate corrective action when policies, procedures, practices, and internal controls are deficient, the investment portfolio represents an unacceptable risk to the corporate and/or the National Credit Union Share Insurance Fund, or when violations of laws and/or regulations have been noted.

Examination Procedures

See Corporate Examination Procedures - Investments (OCCU 201P).

Examination Questionnaire

See Corporate Examination Questionnaire - Investments (OCCU 201Q).

References

1. NCUA Rules and Regulations

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4. Commercial Bank Examination Guide

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7. The Encyclopedia of Banking & Finance, Tenth Edition, Charles J. Woelfel, Irwin Professional Publishing, 1994

8. "Standard & Poor's Corporate Ratings Criteria", Standard and Poor's, The McGraw Hill Companies, N.Y., New York. 1996

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10. NCUA Interpretive Ruling and Policy Statement (IRPS) 98-2

11. Comptroller of the Currency's Examiner's Guide to Investment Products and Practices

Chapter 202

ASSET AND LIABILITY MANAGEMENT (ALM)

Introduction

Asset/Liability Management (ALM) is the process of managing the composition and pricing of a corporate credit union's (corporate's) assets, liabilities, and off-balance-sheet instruments. It also encompasses controlling exposure to financial risk with the goal of maximizing the efficiency of capital over the long term. ALM therefore includes the processes by which an institution: (1) manages and prices its funds, (2) controls its exposure to financial risk, and (3) manages its net interest margin and net economic value.

ALM centralizes management oversight of the above functions to ensure the common goal of achieving the corporate's financial objectives. ALM recognizes that no individual asset, liability, or off-balance-sheet portfolio exists in a vacuum. Rather, ALM explicitly considers each portfolio to be a critical link in the integrated and dynamic process of balance sheet management, and an integral part of the corporate's overall risk/return profile.

The ALM process includes both the decision-making processes and analytical systems involved in managing a corporate's risk/return profile. The decision making process should be comprehensive, and should include the Asset/Liability Committee (ALCO), policies, procedures, and controls to support the ALM function. Analytical systems (i.e., asset/liability models) should provide for comprehensive, timely, and accurate analyses of an institution's global risk/return profile, as well as those of potential strategies.

In assessing an institution's ALM, the examiner's general focus should be to:

1. Ascertain whether the ALM decision-making framework (ALCO, policies, procedure, controls, etc.) is sufficient to guide the major financial functions (listed above).

2. Verify that the analytical systems and instruments available to management are used appropriately in managing the institution's risk/return profile.

Setting Financial Goals: The Risk/Return Profile

A corporate's overall financial return objectives are generally stated in terms of earnings (net interest margin) or value (net economic value) maximization, within the constraints imposed by risks from external and internal factors. Risk is generally characterized as the variability of returns. The greater the risk embedded in individual assets, portfolios, or the overall institution, the greater may be the variability of returns over time.

Management is constantly faced with the fact that, at any given point in time, higher returns (earnings or value) are expected if the corporate takes on greater risk; this is the risk/return tradeoff. Whether to position for a higher expected return at the risk of greater variance in realized return is the issue that confronts the management of each of the financial functions that are overseen by ALM.

For example, when the Treasury yield curve is relatively steep, a corporate can enhance current and expected earnings by borrowing short-term funds and investing in longer term assets. However, rising yields will immediately reduce net economic value and result in reduced realized earnings over time (all other things being equal). If a corporate has derivative authority, it may choose to reduce its overall interest-rate-risk exposure by synthetically extending its liability duration with a pay-fixed interest-rate swap; in this case, the reduced risk will lower the expected return and the expected variance of returns.

This tradeoff between risk and return heightens the difficulty of consistently achieving overall financial goals. Short-term earnings targets may be met by accepting greater risk, but long-term earnings objectives may be compromised. As a result, a rational decision-making process for determining a corporate's optimal risk/return profile and analyzing the impact of numerous risk/return tradeoffs is crucial to successful financial management. This process is called the ALM decision making process.

ALM is therefore a process of "optimization," in which the risk/return tradeoffs of potential strategies are analyzed, and only those that most efficiently support the achievement of the institution's overall financial objectives are implemented.

Measures of Return

An institution's overall financial objectives with respect to return are usually stated in terms of earnings or market value maximization. In specifying these goals, a number of specific measurement gauges may be appropriate, either individually or in combination. These include both earnings-based and market value-based performance measures, as shown in Table 1.

Corporates traditionally specified financial objectives in terms of earnings-oriented performance measures. While earnings-oriented performance measures are still commonly used in the corporate credit union industry, market value-oriented measures are now viewed as critical indicators of corporate financial strength.

Table 1

Measures of Return Performance

A. Earnings-oriented measures
   1. Net interest margin
   2. Core income
   3. Net income
   4. Return on assets
   5. Return on equity

B. Market value-oriented measures
   1. Market capitalization
   2. Liquidation value
   3. Going-concern value
   4. Net economic value

C. Both--Total Return

Earnings-Based Measures

Net Interest Income (NII). - NII is interest income minus interest expense. NII is the primary source of income for a corporate and a key indicator of earnings performance and stability. This measure makes no adjustment for assets that earn no interest or liabilities that bear no explicit interest cost.

Net Interest Margin (NIM). - Net interest income is called NIM when expressed as an annualized percent of moving daily average net assets (DANA). A corporate can optimize its net interest margin by

effectively allocating resources among earning and non-earning assets, maintaining low levels of non-performing assets, providing adequate liquidity funding, and maintaining a strong capital position. In a volatile interest rate environment, large changes in NIM may indicate a significant exposure to interest rate risk and potential risk management concerns.

Core Income. - Core income includes net interest income and fee-based income less operating expenses. It excludes non-recurring income and expense items so that a measure of the institution's fundamental current earning power can be attained.

Net income. - Net income is still the performance measure most utilized by investors, even though it is one of the least meaningful. It is very short term in focus and can be easily manipulated to generate the appearance of favorable earnings trends. For example, nonrecurring gains can be recognized to inflate earnings or to mask the impact of negative underlying developments. Reliance on these gains will negatively affect future earnings (all other things being equal).

Return on assets (ROA). - ROA is net income divided by average assets. To the extent the numerator is distorted by the shortcomings noted above, this measure should be used cautiously or adjusted to account for nonrecurring items. As a ratio measure, the ROA is convenient for other comparative analysis, as is the return on equity measure (below).

Return on equity (ROE). - ROE is net income divided by average equity. The usefulness of this measure is also dependent on the accuracy of the numerator. The ROE is widely used by institutional investors as the key measure of performance.

Market Value-Based Measures

The measures of return discussed so far are based on reported earnings (i.e., accounting data). In contrast, market value measures reflect economic value.

Market Capitalization. - Market capitalization is the equity shares outstanding times the price per share. Since corporates are mutual organizations, this measure is not applicable.

Net Economic Value (NEV). - NEV is equal to the difference between the market values of assets and liabilities, plus the termination value (mark-to-market value) of off-balance-sheet instruments. This net

economic value may be computed under different assumptions. NEV represents, in effect, the present value of long-term earnings streams. By focusing on stabilizing its market value, a corporate will also stabilize its long-term earnings. For this reason, market value measures have gained acceptance in recent years in many financial institutions.

The overriding management objective is the efficient use of capital. The more efficiently capital is employed by a corporate, the greater the value-added to members in terms of dividend rates, services and protection from adverse events. Optimization of NEV is a management goal that serves the members' demand for a satisfactory return on their investment (ownership in the corporate). Return on capital flows directly to the members in the form of dividends on shares and indirectly in the form of NEV increases and services (to the extent that they are offered at or below the member's alternative cost).

A corporate computes NEV using its own assumptions, models, and methodologies. The corporate examiner (examiner) should review this process for reasonableness. NEV must be produced at least quarterly, and as frequently as monthly, depending on the level of authorities and/or amount of unmatched embedded options in the balance sheet. NEV is measured for a base case as well as a series of permanent, instantaneous and parallel shifts of the Treasury yield curve. This analysis of the sensitivity of NEV is an invaluable tool in the assessment of interest-rate-risk exposure.

Liquidation Value. - Liquidation value is the residual value that would remain if all assets, liabilities, and off-balance-sheet instruments were sold, terminated, or offset today (or in the short term). Current market prices are used to value all asset, liabilities, and off-balance-sheet instruments for which market prices are available. If prices are not readily available for certain items, then the value is computed based on a discounted cash flow analysis.

Liquidation value is the "bottom line" to an insurance fund, such as the National Credit Union Share Insurance Fund (NCUSIF), because to the extent the proceeds from asset sales are not sufficient to cover the balance of deposits, the fund will experience losses.

On-going Concern Value. - The going-concern value generally assumes that an institution must value not only its existing portfolios, but also those additions to the portfolio that can be expected as growth occurs or run-off is reinvested. In other words, the institution can be assumed to be a "going-concern," as opposed to being liquidated on a one-time basis.

Total Return

Total return has long been the accepted measure of performance for investment securities, but it has only recently gained acceptance in the depository institution industry as a performance measure. Total return incorporates earnings and market value appreciation in the assessment of performance. The total return concept thus considers both short-term and long-term earnings levels and stability.

Selecting a Measure for Returns

Each corporate must determine the relative merits of each performance measurement, then clearly state and internally communicate the return objectives for the overall institution, as well as each financial function. Just as importantly, the institution must clearly enumerate the constraints (risks) within which those return objectives must be achieved. In this regard, the framework for identifying and measuring risk exposure also must be determined.

Measuring Risk Exposure

Sources of Risk Exposure

The most significant sources of risk to a corporate are interest-rate, liquidity and credit risks. Interest rate and liquidity risks are most relevant to the ALM process. Other risks include operational risk, fraud, and the risk of disasters or catastrophes. Since the measurement of these risks is discussed in more detail in other Guide sections, they are only briefly described here.

Interest-rate risk. - Interest-rate risk is the primary focus of the ALCO and the ALM decision-making process. It arises from three primary sources: (1) the mismatch between the maturities or durations of assets, liabilities, and off-balance-sheet instruments; (2) option risk including, the risk that asset/liability durations will change as interest rates change; and (3) basis risk, the risk that asset and funding/hedging rate spread relationships will change.

Mismatch risk is the most prevalent source of interest-rate risk. Option risk arises from the prepayment, cap, floor, and other options embedded in underlying mortgages, CMO tranches, adjustable-rate loans, term deposits, and other products. These options heighten the difficulty of hedging interest-rate risk because they contribute to the volatility of underlying asset and liability durations.

Basis risk occurs when unhedged or unhedgeable changes in interest-rate spread relationships (between assets and liabilities or hedges) contribute to the instability of net interest earnings or value. For a typical corporate, this risk usually arises when it buys assets indexed to LIBOR, PRIME or COFI and issues liabilities to members based upon Treasuries or Fed Funds. Basis risk tends to have less of an impact on corporates than changes in the general level of interest rates.

These three sources of interest-rate risk, and the measurement and management of interest-rate risk, are discussed in the Interest-Rate-Risk Management section of this chapter (Page 202-30).

Liquidity Risk. - Liquidity risk is the risk that funds may not be available to meet cash outflows when they arise. This may arise because of insufficient cash flow or because the assets designated as cash equivalents are not able to be sold quickly without causing a large decline in the market value. Liquidity risk also can become significant if the financial condition of an institution is deteriorating and members and creditors begin to withdraw or demand payment of their funds. Section 704.9 requires corporates to regularly monitor sources of internal and external liquidity and to model projected liquidity through a series of successively deteriorating scenarios. No explicit liquidity ratios or measures are specified in the regulation.

A corporate should strive to maintain an amount of liquidity that is most efficient given its overall economic situation which in turn reflects the anticipated funding demands of its members. As a practical matter, corporates should maintain liquidity in excess of their projected day-to-day requirements. The maintenance of minimum liquidity levels represents a constraint on ALM. These and other aspects of liquidity management are discussed later in this chapter (Page 202-39).

Credit Risk. - Credit risk is the exposure to loss as a result of default on a debt, swap, or some other counterparty instrument. Credit risk includes the exposure to loss as a result of a decline in market value stemming from a downgrade of an issuer or counterparty, or a change in the perception of the probability of default.

The impact that credit risk can have on market value affects NEV and liquidity. Therefore, it is important that the credit risk management process be reviewed by the Asset/Liability Committee (ALCO). This process includes: asset quality review (including credit ratings, level of subordination, credit enhancements, etc.); underwriting policies and guidelines; restructurings/workouts; and reserving levels. Credit risk of investments is discussed further in Chapter 201, Investments.

Other Risks. - Operational risk, fraud, and disaster risks are generally not managed or overseen by the asset/liability manager or the ALCO, but they must be considered within the ALM function. To illustrate, since the ALM function will direct the corporate wide flow, of funds, adequate procedures and controls must be installed to avoid inefficiency and fraud. Also, ALM systems must be backed up frequently and stored in an off-site location to enable the continuation of ALM operation in the event of a disruption. Thus, the ALCO must have reasonable assurance that management responsibilities, internal controls, and information systems are adequate to provide clear guidance and control in the execution of balance sheet strategies.

Quantifying Risk Exposure

The risk of a given ALM strategy is typically quantified through the use of asset/liability models to perform simulation or sensitivity analyses. Important assumptions used in the projection of earnings or valuation of assets and liabilities are altered, and the change in expected returns (earnings or value) is determined. Asset/liability modeling is discussed in more detail later in this Section under "Asset/liability Modeling and Analysis" (Page 202-14).

Recent advances in computer technology have made risk quantification feasible for virtually any individual portfolio or balance sheet. Of course, risk analysis can only be as good as the data and assumptions (including those not subjected to the sensitivity analysis) used in the model. Examiners must therefore review and critique the risk quantification methodology used by the corporate. All corporates are required to conduct a fair value (NEV) assessment of the balance sheet for a variety of rate scenarios. Other assessments may also be performed.

Once a methodology has been developed for measuring the risks in a corporate's balance sheet, limits for risk exposure must be established. Then management can concentrate on identifying and executing the most "efficient" strategies. Efficient strategies are those that best support the achievement of the institution's optimal risk/return profile. This may be done on a total balance sheet basis or it may be done for discreet portfolios, sometimes termed "books of business."

Optimization: Achieving an Efficient Risk/Return Profile

Once the institution's return objectives and risk constraints have been established, management must select strategies that most efficiently support attainment of goals. This process is called "optimization."

The best optimization framework results in the selection of strategies with the highest return for the same (or similar) level of risk. Since the expected returns are quantifiable, and the variability of expected returns (risk) can be quantified through sensitivity analysis, a relatively objective selection framework results. Comparing two strategies with the same quantified risk exposure, the strategy with the higher return is considered most "efficient," or that with the highest "risk-adjusted return." By adjusting expected returns for the level of anticipated risk (variability of expected returns), this framework puts all the alternatives on a common measurement basis to facilitate decision making.

Optimization leads to the risk/return profile most desired by the board and management. The optimization framework is at the top of the ALM decision making process, which includes the ALCO, ALM policies, and related procedures and controls.

The cornerstone of a successful ALM/ALCO process is a technically rigorous asset/liability model that allows management to quantify risk/return tradeoffs.

The ALM Decision-Making Process

The ALM decision-making process consists of:

1. the ALM policy framework;
2. the Asset/Liability Committee;
3. a comprehensive asset/liability model; and
4. related procedures and controls.

A shortfall in any of these process components can potentially disrupt the entire ALM function. If, on the other hand, these components are well designed and utilized, an institution will most likely attain its desired risk/return profile and overall financial objectives.

Examiners should review the ALM policies and asset/liability modeling process. It is usually very instructive to observe an ALCO meeting during the examination, since this is the core of the ALM decision-making process.

The ALM Policy Framework

Board policy and delegated authorities are crucial to the ALCO and the ALM function. Every portfolio in the corporate is affected by the ALM process, and each decision has an impact on both current and

future profitability. Elements of an acceptable ALM policy are outlined in Table 2.

Table 2

General Outline of Asset/Liability Management Policy

I. Objectives of ALM
   A. Implement Board-Approved Policies
   B. Integrate the Financial Functions
   C. Determine Desired Risk/Return Profile
   D. Analyze Risk/Return Tradeoffs of ALM Proposals

II. Delegation of Authority from Board of Directors

III. The ALCO

IV. Asset/Liability Management Functions
   A. ALCO Support
   B. Asset/Liability Modeling and Analysis
   C. Execution of ALM Strategies

V. Risk Limitations
   A. Interest-Rate Risk
   B. Liquidity Risk
   C. Credit Risk
   D. Other Risks

VI. Internal Controls/Guidelines
   A. Internal Controls (position limits, transaction authority, authorized dealers, etc.)
   B. Guidelines (approved security/instrument types, transaction/position limits, etc.)

The ALM policy legitimizes the ALM function within a corporate and provides a formal framework for its operation. Therefore, examiners should review the ALM policy of every corporate. Some corporates may alternatively refer to their asset/liability management policy as the investment policy or funds management policy, etc.

Examiners should determine whether: (1) the policy limits are reasonable given the corporate's financial condition, (2) management is complying with the board-approved policies, and (3) periodic reports to the board are adequate.

The Asset/Liability Committee

The ALCO is at the core of an integrated, centralized ALM process. The objectives of the ALCO are to:

1. Implement board-approved policy.

2. Oversee and integrate the financial functions, and to ensure a centralized approach to funds management, risk management, and earnings/capital management.

3. Set overall return objectives and to quantify risk constraints, thereby defining the institution's risk/return profile.

4. Review the risk/return tradeoffs of potential ALM strategies to ensure that they most efficiently support the achievement of the desired risk/return profile.

The ALCO decision-making process is just as important for small corporates as large ones. Relative to asset size, many asset/liability decisions in small corporates frequently have a greater impact on funds availability and earnings than those of their larger counterparts. The larger corporates tend to have a greater depth of personnel to staff an ALCO, but small corporates must rely on a few key managers to carry out this critical function.

Part 704 of the NCUA Rules and Regulations requires corporates to have a formal ALCO. The committee should comprise key managers and must include at least one director. A typical ALCO will include the CEO, the CFO, the investment personnel (risk takers), the asset/liability and credit risk managers (risk monitors), and any other senior managers who routinely participate in the financial activities and strategies of the corporate.

The ALCO structure should be assessed by the examiner on a case-by-case basis, and recommendations should be made if it becomes evident during an examination that decision making is hampered or the representation on the committee is not adequate. The ideal size and composition of the ALCO will depend upon the strategic direction of a corporate and the relative size or importance of various portfolios. Sometimes a committee that is too large is more of an impediment than a benefit to the decision-making process.

In some large corporates, the ALCO is further broken down into an internal or management ALCO and a board ALCO. By having a management ALCO, a corporate can have more frequent and technical discussions regarding the execution of strategies approved by the

board ALCO. Board ALCO meetings tend to coincide with the monthly board meetings and permit officials who are not formal members of the committee to attend. This dual structure can permit the board to expeditiously review and challenge ALM reports without having to wade through technical details not directly related to strategic goals and risk oversight.

ALCO Meetings

A board ALCO should meet at least monthly. A management ALCO, if constituted, customarily meets more frequently and should be available to meet on short notice, if necessary, to respond to financial market developments. Participation on either ALCO is a major commitment to the institution. ALCO attendance should be mandatory and a quorum should be established to facilitate decision making in the absence of one or more members..

Examiners should verify that appropriate emphasis is placed on the ALCO decision-making process. For example, if the CEO often fails to attend the ALCO meetings, or if the ALCO is otherwise relegated to a secondary status, the committee is unlikely to achieve its objectives. This situation may occur even if the corporate has a well-structured ALCO, good ALM policies, and a proficient modeling capability. *The ALCO should function as a risk management body and not as an investment committee simply dedicated to analyzing perceived market opportunities.*

Training for ALCO (and board) members is an important component of a strong ALCO process. Periodic training is necessary to keep abreast of market trends, products, and contemporary best practices in risk management. Training may be conducted by the staff of the corporate but should be augmented from time to time with professionals from outside the company who are known or regarded experts on the topic presented.

ALCO Functions

The functions of the typical ALCO are presented below. Depending on the size of the institution, complexity of its portfolio, and its asset/liability mix, the ALCO process may vary. The following functions should be considered.

1. Receive and facilitate oversight by the board of directors. Provide periodic reports to the board regarding policy compliance, such as interest-rate-risk exposure reports, earnings/capital projections and analysis, etc. Periodically review ALM policy and recommend changes to the board;

2. Determine financial objectives and establish policy for each of the financial functions;

3. Coordinate funding of investments, lending (if any), and other activities. Project and review, at each meeting, the funding surplus/deficit with comprehensive short-term and long-term cash flow forecasts. Optimize cash resources, investment of liquid funds, and access to borrowed funds;

4. Coordinate product pricing. Oversee product-pricing mechanisms to ensure that spread requirements are achieved and maintained. Set product prices on an incremental basis in conjunction with funding costs;

5. Direct the analysis of proposed ALM strategies or transactions through technically rigorous simulation and scenario analysis;

6. Direct computation and monitoring of NEV. Reconcile NEV calculations to book value, and review economic and earnings effects of ALM decisions;

7. Set limits with regard to interest-rate-risk exposure, both in the context of NEV and NII sensitivity. Identify measurement methodologies for the quantification of interest rate risk;

8. Oversee investment portfolio management activities. Ensure that excess liquid funds are optimally invested in securities that complement the institution's overall risk/return profile;

9. Monitor economic and interest-rate environment, including regional and national economic conditions, prepayment trends, volatility, related regulatory developments, and more;
10. Direct hedging operations (if any), including hedge analytics, related policy development, and integration with the overall risk/return profile. Specify the range of instruments that can be used to hedge the various kinds of risk exposures;

11. Direct capital market activities, including capital raising, debt issuance, dividend policies, and merger/acquisition analysis.

Ensure that these activities are integrated with the management of the overall risk/return profile; and

12. Ensure that product development activities support the institution's overall risk/return objectives.

Examiners should review the ALCO's performance. It is important that the ALCO function be centralized. A lack of centralization weakens the control of risk. Thus, the responsibilities detailed above should not be managed outside of this process by staff whose authority supersedes the ALCO.

Asset/Liability Modeling and Analysis

Asset/Liability Modeling

The ALM decision-making process should be centered around quantified measurements of the institution's overall risk/return profile and those of potential ALM strategies and instruments. Management should use a reliable asset/liability model in its ALM operations. An institution's asset/liability model should allow the asset/liability manager and the ALCO to identify and further analyze efficient ALM strategies. The model serves both strategic and risk monitoring objectives.

A model must be able to:

1. Accept a wide variety, and potentially a large volume, of data input and assumptions;

2. Perform sensitivity and simulation analyses (described below) under different scenarios;

3. Generate summary reports that are concise and decision-oriented;

4. Allow for quick turnaround of "what if" analyses; and

5. Accommodate new instruments and products.

Examiners should review the ALM modeling process to determine whether the corporate's model (if any) is capable of performing the above tasks. Management should maintain its asset/liability model(s) commensurate with the scope and complexity of their activities.

Most asset/liability models have the same general design. Data concerning the institution's current balance sheet position (and off-

balance-sheet items) are entered (either manually or on an automated basis) with the key earnings and value parameters for each portfolio. For example, the earnings parameters for fixed-rate mortgage related securities include the expected cash run-off (determined using a prepayment assumption) in each forecast period, the weighted-average coupon, and expected incremental activity in the portfolio.

Next, assumptions concerning future interest rates, prepayment conditions, spreads, and incremental activity are entered. Many of these assumptions are "shocked," or altered by certain amounts to enable the corporates to view their impact on earnings and net economic value. Then, decision-oriented reports are generated to support the ALCO function and ALM decision making.

Asset/liability models are used to perform sensitivity and simulation analyses in the measurement of interest-rate-risk exposure and the analysis of proposed strategies. Sensitivity analyses are used to study the impact of strategies and assumptions on NEV in different environments. Simulation analyses review the impact of different strategies and assumptions on earnings. Ideally, a corporate's asset/liability model will be capable of quickly generating numerous sensitivity and simulation analyses. Such models allow for the analysis of both risk and return, within the context of both market value and accounting earnings. This kind of comprehensive analysis best facilitates the identification of the desired risk/return profile, and the analysis of risk/return tradeoffs.

Some corporates perform asset/liability modeling only to meet regulatory requirements pertaining to interest-rate-risk measurement, rather than to support management analysis and decision making. Others have limited ability to model dynamic assets with embedded options yet they are inclined to buy such instruments. Also, many institutions do not have an adequate process in place to check or edit the model after manual data entries have been made (discussed earlier). These shortcomings should be noted in the examination report.

Another frequent problem in the asset/liability modeling area is that unnecessarily cumbersome reports are generated for the ALCO, rather than summary-level analytical reports. The ALCO reports must contain useful information, not unintelligible reams of data. Sometimes, the computers used to run asset/liability software are too slow to support iterative sensitivity or simulation analysis. In such cases, the ALCO gets only a limited analysis, and may limit its requests for additional analysis, due to the lack of sufficient computer power. The need for and benefits of comprehensive analysis should

drive the analytical process. Therefore, management should be made aware of computer power or report generation limitations that needlessly impede ALM analytics. In such cases, management should be encouraged to upgrade its capabilities. Examiners should be concerned when the ALCO has an appetite for risk-taking strategies, but is unwilling to implement an adequate model for cost or other reasons.

Other problems that become evident in the examination of the A/L modeling function include:

1. Over-reliance on outside consultants;
2. Use of overly simplistic assumptions (example: basing all liability pricing off one key or index rate);
3. Over-reliance on manual data entry;
4. Overly complex or overly condensed chart of accounts in asset/liability model (aggregation of instruments); and
5. Inexperienced personnel in modeling function.

Other Modeling/Analytical Requirements

In addition to the asset/liability model, which is used to measure institution-wide interest-rate risk and the impact of traditional balance sheet ALM strategies, other models will likely be necessary to value specific instruments or to project assumptions for the asset/liability model or other purposes.

Those models may include:

1. Mortgage-derivative analysis (e.g., Bloomberg);
2. Off-balance-sheet derivatives:
    a. interest-rate swaps;
    b. options;
    c. futures contracts; and
    d. forward agreements;
3. Mortgage (or other) prepayment forecasting;
4. Hedge analytics (hedge ratio calculations, regression analysis);
5. Interest-rate projection (forward Treasury yield curve analysis, cost-of-funds index projection);
6. Secondary marketing analysis (net exposure calculations, fallout projection);
7. Trading portfolio (technical analysis, charting, program trading);
8. Product profitability (transfer pricing, functional cost analysis); and
9. Budgeting.

Examiners will need to review most, if not all of these models, especially if they have a material impact on the ALM function. The review process should basically be the same as the review of the asset/liability model. In many cases, institutions rely on outside vendors, brokers, or consultants to perform analyses or calculations. Generally speaking, the over-reliance on an outside party for analysis used in an institution's key decision-making processes should be considered an unsafe and unsound practice.

If the output from outside models is used in conjunction with the corporate's asset/liability model, the structure of the model and the assumptions used in it must be consistent with the asset/liability model. Otherwise, management will be comparing apples with oranges.

Models of Interest-Rate Risk

Measures of IRR require reliable information on the amount and timing of the cash flows generated by an institution's assets, liabilities, and off-balance-sheet instruments. Because this information is not always known with certainty, assumptions must be made to perform the analysis. Depending on the type of analysis, these assumptions may include: (1) how market interest rates will change (over the period of analysis); (2) how instruments with rate dependent cash flows vary with interest-rate changes; (3) how management will administer interest rates that are under its control (such as rates on shares and membership capital), when the general level of interest rates changes; and (4) in NII models, how management will reinvest interest and principal cash flows.

Two types of models are commonly used by depository institutions to estimate the interest-rate sensitivity of NII: maturity gap models and NII simulation models. Likewise, there are two types of models commonly used to estimate the sensitivity of NEV: duration gap models, and NEV simulation models.

Maturity gap and simple duration gap models are similar in that they implicitly make assumptions about the way interest rates and cash flows behave. Perhaps the most serious shortcoming of these models is that they assume cash flows do not change in response to interest-rate changes. For example, the model assumes that adjustable-rate loans do not reprice again after their next reset and that mortgage prepayment rates and share decay rates do not vary. The result is that the estimated change in NII or the change in the NEV of the institution is the same for a given increase in rates as it is for an equivalent

decrease. However, in reality, the prepayment option embedded in mortgage assets results in asymmetric price changes for mortgages. That is, price increases when rates fall tend to be less than price declines when rates rise. The value of most corporate balance sheets shows a similar sensitivity. This sensitivity cannot be accurately estimated by gap and duration models that assume that cash flows are the same in all interest-rate environments.

NII and NEV simulation models, on the other hand, permit these assumptions to vary, but necessarily rely more heavily on the analyst to make choices about certain behavioral relationships incorporated into the model. Even though they rely more heavily on parameters set by analysts, NII and NEV simulation models can be much more accurate than their less sophisticated counterparts if appropriate assumptions are used.

When assessing any measure of IRR of a corporate, the examiner should be careful to evaluate the reasonableness of the assumptions used in the analysis.

Maturity Gap Models

Maturity gaps are relatively easy to calculate compared to other measures of IRR, and during the 1980s were the most commonly used measures of IRR in depository institutions.

Maturity gap analysis measures the difference, or "gap," between the dollar value of assets and liabilities maturing or repricing during a given time period. The dollar gap is often expressed as a percentage of assets. When multiplied by a hypothetical change in interest rates, the dollar maturity gap gives a rough estimate of the effect of such a rate change on NII.

To calculate the maturity gap, principal balances of interest-earning assets and interest-bearing liabilities are categorized by maturity/repricing intervals or "buckets" (e.g., under one year, one to three years), depending on when the principal cash flows will be received or when their interest rate will next be adjusted. In more sophisticated gap models, the timing of the principal cash flows is adjusted by incorporating the effects of asset amortization, mortgage prepayments, core share decay, and the effects of off-balance-sheet hedging instruments.

As an example of a maturity gap calculation, assume a corporate with $10 million in asset estimates that $3 million will "reprice" during the next year (by having principal mature, prepay, amortize, or having the

coupon adjust). Further, it is estimated that $6 million of liabilities will reprice during this time. This institution is said to have a "one-year gap" equal to negative 30 percent [($3m-$6m) /$10m].

$$GAP = \frac{(\$Asset\ Repricing) - (\$Liabilities\ Repricing)}{\$Total\ Assets}$$

To estimate the effect a change in interest rates has on an institution's interest margin, the gap as percent of assets is multiplied by the hypothetical rate change. For example, the estimated effect of a 1 percent rise in interest rates on NII over the next year would be approximately 0.30 percent or 30 basis points (1.0 percent x -30 percent = -0.30 percent). Given assets of $10 million, this decrease in interest margin would translate to a reduction in NII of $30,000 over this period.

Although maturity gaps are relatively easy to measure and do provide a rough measure of NII sensitivity, they have a number of well-known shortcomings including the following:

1. Maturity gap models typically focus exclusively on near-term NII. This focus hides the risk to NII of longer-term repricing mismatches. This ignores potentially adverse effects on not only earnings but also liquidity.

2. The repricing intervals chosen for analysis are arbitrary and there may be significant mismatches within a repricing interval that will be ignored in the analysis. The most common repricing interval analyzed by depository institutions is the one-year gap and the one to three-year gap. A cash flow to be received in one year should have a different effect on interest-rate exposure of an institution than an identical cash flow to be received in two and one-half years. Yet the one to three-year gap model would treat these two cash flows as equivalent in terms of their effect on the IRR of the institution.

3. Using maturity gaps to estimate the change in NII resulting from a change in interest rates assumes all interest rates change by the same amount--an unlikely occurrence. When the general level of interest rates increases by 1 percent for example, some interest rates, such as those paid on short-term transaction accounts, typically increase by a smaller amount, if at all.

4. It is not possible to properly incorporate the effect of exchange-traded options or the options embedded in many financial instruments such as early withdrawal options on share certificates,

the caps and floors in ARMs, and mortgage prepayment options. These options have a significant effect on the rate sensitivity of a financial instrument; neglecting to incorporate them into the analysis will misstate the IRR of an institution.

NII Simulation Models

NII simulation models project interest-related cash flows of all assets, liabilities, and off-balance-sheet instruments in an institution's balance sheet in order to estimate future net interest earnings over some chosen period of time. They are often referred to as "dynamic" NII simulation models because changes in operating strategies, relative interest rates, early withdrawal of shares, and prepayments can be built into the model.

NII sensitivity is calculated as follows. First, "base case" NII is projected for the current interest-rate environment. Cash flows for each instrument are projected using assumptions about amortization characteristics, prepayment rates on mortgages, and share decay rates. Assumptions must be made regarding how the principal and interest cash flows received during the period of analysis will be reinvested.

Next, various simulations are done under alternative interest-rate scenarios. For example, many models estimate the value of NII over the next year if interest rates were to increase or decrease by 100, 200, or 300 basis points. As in the base-case scenario, interest cash flows are projected over the period of analysis, and will depend on assumed share decay rates, prepayment rates, and on how rates on adjustable-rate assets and shares are assumed to change in each interest-rate scenario. (To project how the coupons on adjustable-rate assets will change, information on the time to first reset, reset frequency, and the presence of any rate caps or floors is needed.)

The larger the differences in projected earnings between the base case and the alternative interest-rate scenarios, the higher the level of IRR.

NII Simulation offers the following advantages:

1. NII simulation models can provide more accurate estimates of the effect of changing interest rates on the future interest income of instruments with embedded options by varying prepayment rates according to the interest-rate scenario being simulated. The value of other embedded options (e.g., lifetime caps on ARMs) and off-balance-sheet instruments in institutions' balance sheets can be similarly assessed.

2. Interest rates on different instruments can be assumed to change by different amounts when there is a change in the general level of interest rates. For example, changes in rates on core shares can be assumed to lag behind changes in other rates.

Simulation analysis also has a disadvantage. Like gap analysis, NII simulation models typically measure the effect of a change in interest rates over only short periods of time such as one year. Models that do project NII over longer periods of time sometimes aggregate these future cash flows in a manner that implies that cash flows received in the distant future are as valuable as those received in the near future. For example, a model may indicate that if rates increase by 100 basis points, an institution will lose $100 during the next year but will gain $100 in year two of the analysis. In fact, the present value of the $100 received in two years is less than the value of $100 received in year one. NII models that project NII over long periods should take the time value of money into account.

Analysis of the Sensitivity of Net Economic Value

The net economic value "N" equals the estimated present value (or "economic value") of assets "A," less the present value of liabilities "L," plus or minus the present value of all off-balance-sheet items "O."
Thus,

$$N = A - L + O$$

Two types of models are commonly used to analyze the sensitivity of NEV: the duration gap model and the NEV sensitivity model. Both models require detailed information on the amount and timing of all future cash flows deriving from all financial instruments in the balance sheet as well as the specification of appropriate discount rates.
Duration Gap Analysis

Duration gap is the difference between the weighted-average duration of assets and liabilities, adjusted for the net duration of all off-balance-sheet instruments. It is a measure of the percentage change in the NEV that would be expected if interest rates were to change by 100 basis points. This measure is a "point" estimate and is accurate for only small changes in interest rates.

To calculate the duration gap, the duration of each item in the balance sheet is separately calculated. The duration "D" of each instrument is weighted by the ratio of its market value to the net value of the balance

sheet, and the weighted durations of all assets, liabilities, and off-balance-sheet instruments are netted as follows.

$$D_N=D_A(A/N)-D_L(L/N)+D_O(O/N)$$

There are several different forms of the duration measure including simple (or Macaulay) duration and modified duration. Modified duration is the measure most often used to calculate the duration gap, and because it requires calculation of simple duration, both measures are described below.

Simple Duration

Simple duration was developed to provide a measure of the average time to receipt of the cash flows of a financial instrument. It measures the weighted average time until payments are received, where the weights are the proportion of the total present value of the instrument received in each period.

Calculation of the simple duration of an instrument requires three steps. First, calculate the present value of each cash flow (principal and interest) by discounting them by the instrument's required yield. (The sum of these present values equals the estimated price or market value of the instrument.) Second, multiply each present value by the number of years until it occurs, and sum these time-weighted present values. Third, divide the sum of the time-weighted present values from step two by the sum of the unweighted present values from step one.

Modified Duration

Modified duration is a measure of the interest-rate sensitivity of an instrument and is obtained by multiplying simple duration by -1/(1+Y periodic/CPY) where Y periodic = nominal annual yield and CPY = number of compounding periods per year (e.g., if Y period is a bond equivalent yield, then CPY = 2). Modified duration indicates the expected percentage change in an instrument's price for a given change in the required yield of the instrument.

$$\%\blacklozenge P=(-D/1+\underline{r})x\blacklozenge r,$$
$$2$$

where D=duration of the instrument,
P=price of the instrument,
r=required yield of the instrument, and
♦=represents "the change in."

For example, if a liability had a modified duration of -4, the price of the liability could be expected to decline by .04 percent (.0004) for each basis-point increase in interest rates. After the duration of each item in the balance sheet has been calculated, each instrument's duration is weighted by the ratio of the market value of that instrument to the NEV, and netted.

One difficulty in calculating the duration gap lies in obtaining economic values for each instrument. If market price quotes cannot be obtained, the economic values may be calculated using present value analysis as described in the next section on the NEV sensitivity model. Book values are sometimes used to calculate the duration gap when market values are not available or not easily estimated. When economic values diverge significantly from book values, the use of book values may result in significant error in the estimation of the interest-rate sensitivity of balance sheet value. Other drawbacks of duration gap analysis are listed below.

1. Duration gap analysis provides accurate estimates of price sensitivities of instruments only for small changes in interest rates, say, less than 100 basis points. Modified duration assumes the percentage price change due to a rate change of a given magnitude will be the same when rates rise or fall (although opposite in sign). This is not, however, true when rates change by a large amount. For a simple bond with no embedded options (such as a noncallable Treasury security), a large decrease in rates will result in a larger percentage increase in price than the percentage

decrease in price that would result from an equal increase in rate (this phenomenon is known as convexity). The analysis is further complicated when analyzing financial instruments with embedded options such as mortgage loans. Because borrowers tend to prepay their loans when refinancing rates fall below the coupon on the loans, the value of the loan will not rise as much as it would have had borrowers not prepaid (negative convexity).

2. Duration does not take the shape of the yield curve into account. The present values in the modified duration computation are usually calculated using the same discount rate (the required yield) for each future cash flow irrespective of when that cash flow will occur. This causes long maturity cash flows to be overvalued and short maturity cash flows to be undervalued, biasing the estimated duration.

NEV Sensitivity Analysis

The measure of IRR deemed most important by NCUA is the sensitivity of the NEV to changes in interest rates. A corporate's NEV is defined as the present value of assets minus the present value of liabilities plus the net market value of off-balance-sheet contracts. The sensitivity of NEV is the change in a corporate's NEV that would result from a shift, or shock, in the term structure of interest rates, say, by plus or minus 100 basis points.

Unlike simple duration gap, this measure may be used to estimate the change in economic value for substantial changes in interest rates, like 100 or 200 basis points or more. These larger changes in interest rates allow the measure of IRR to depict the corporate's economic exposure across a wider range of possible outcomes.

The remainder of this section is devoted to a brief overview of NEV sensitivity analysis. In particular, two methods of measuring the economic value of financial instruments are discussed.

Measuring NEV: Static Discounted Cash Flow Approach

The value of a financial instrument can be estimated by projecting the amount and timing of the future net cash flows generated by the instrument, and discounting those cash flows by appropriate discount rates. This procedure is commonly referred to as discounted cash flow analysis, or present value analysis.

The basic formula for the present value of a financial instrument is as follows:

$$PV = CF_1/(1+i_1) + CF_2/(1+i_2)^2 + ... + Cf_m/(1+i_m)^m,$$

where CF_1 is the estimated amount of the first cash flow generated and i_1 is its discount rate. The discount rate used for each projected cash flow is the yield currently available to investors from cash flows resulting from alternative instruments of comparable risk and duration.

The accuracy of any valuation derived from the discounted cash flow analysis depends on the accuracy of both the cash flow estimates and the discount rates used. These cash flows and discount rates must be estimated not only for the current scenario, but for each of the alternate interest-rate scenarios being estimated.

1. Estimating Cash Flows

Under each interest-rate scenario, a single path of future interest rates is assumed, based on future rates implied by the current term structure of interest rates. (In fact, this analysis is referred to as "static" cash flow analysis because each scenario depicts a single hypothetical path of interest rates, as opposed to the numerous paths used in the option adjusted spread (OAS) analysis described below.) Cash flows are calculated within each scenario based upon the assumed path of interest rates depicted in that scenario.

Cash flows may differ across scenarios for two reasons. First, mortgage prepayments and share attrition rates will differ since mortgage holders and share holders can be expected to make different decisions about these actions under different interest-rate environments. Such differences in behavior are modeled by specifying a relationship between the interest-rate scenario and the rates of prepayment and attrition, thereby changing the magnitude and timing of principal and interest cash flows. Second, the magnitude of interest cash flows differs across scenarios as adjustable-rate instruments (such as ARMs or demand accounts) reprice in future periods and receive different future coupon rates under different scenarios.

2. Discount Rates

The rate used to discount a cash flow should represent the yield obtainable in the market for a cash flow of similar maturity and risk.

There are two common methods for arriving at the discount rates for a particular instrument. The simpler method is to discount every projected cash flow by the yield of comparable instruments. In this case, each of the "i's" in the above equation would equal the current market yield of the instrument for which cash flows are being discounted.

A more complex, and more accurate method is to use non-constant discount rates based on the yields of zero-coupon instruments with maturities equal to those of each respective cash flow. In practice, this is done by calculating for each cash flow a discount rate that has two components: a risk-free component, which is represented by the zero-coupon Treasury yield for the same maturity, and a fixed spread, which compensates investors for prepayment, credit, and liquidity risk. This fixed spread is calculated as that increment to each of the risk-free components that causes the sum of the discounted cash flows to equal the observed market price of the instrument.

For either of the methods used, the discount rates in the alternate interest-rate scenarios are typically adjusted by adding or subtracting the amount of the interest-rate shock (e.g., for a plus 100-basis-point scenario, add 100 basis points to each discount rate).

Measuring NEV: Option-Based Pricing

An option-based pricing approach is a more sophisticated approach to valuing assets (and, less frequently, liabilities) that contain embedded options.

The most important options in corporates' balance sheets are the prepayment options in mortgage securities and the caps and floors in adjustable-rate mortgage securities. When mortgage rates fall, mortgage prepayments typically accelerate, forcing corporates to reinvest the proceeds at lower yields. Interest-rate caps and floors prevent the coupon rates of adjustable-rate assets from moving above or below a certain level when interest rates change. Both of these types of options can have a significant effect on the interest-rate sensitivity of the instruments in which they are embedded.

In large part, the values of these options depend on the volatility of interest rates. When mortgage rate volatility increases, there is a

greater chance that mortgage rates will fall sufficiently below the rates on existing mortgages so as to induce prepayment. Likewise, the greater the volatility of the index on which adjustable-rate loans are based, the more likely that the coupon will be constrained by any rate cap or floor.

Option-based pricing models, also known as OAS models, use an interest-rate simulation program to generate numerous (hundreds or thousands) random interest-rate paths that, in conjunction with a prepayment model, are used to estimate mortgage cash flows along each path. These cash flows are then discounted and averaged to arrive at a single mortgage price.

OAS models provide more accurate estimates of the value of these embedded options (and, therefore, of the mortgages themselves) than static discounted cash flow models. In a static cash flow analysis, the option has no value unless it is "in the money" (i.e., the prepayment option is exercised because rates have fallen and the homeowner chooses to refinance, or the rate cap or floor is effective). In fact, like exchange-traded options, these options have value even when they are not in the money, because it is possible they will be in the money at some future date. Market participants will, therefore, pay more or less for the instrument containing the option depending on the likelihood of exercise.

The sensitivity of NEV is a valuable measure of IRR because it estimates how the economic value of an institution changes when interest rates change. In addition, the results are easy to interpret. However, it is a complex measure that requires extensive modeling, and, as with any measure of IRR, the results are sensitive to the assumptions used.

Procedures and Controls

To ensure the integrity of the ALM decision-making process, internal procedures and controls must provide for efficient data flows. This is especially important because of the need to receive and input cash flow data from every major department in the corporate, and to make coordinated decisions affecting the entire institution based on the analysis of that data. The size of the corporate and the volume of transactions should be taken into consideration by examiners.

If the ALM process is not functioning properly, examiners should focus on the related operating procedures and internal controls. In a large institution, the documented procedures typically will need to be

quite extensive to accommodate a large volume of data flow from numerous functional areas to the asset/liability manager.

Internal Procedures

Procedures must be documented and in place that allow for the smooth and timely flow of data to the asset/liability modeling function, the ALCO, and other areas. Flow charts documenting this physical flow of data from all departments are usually very informative. If such flow charts do not exist, management should be encouraged to develop them.

Procedures also must be installed to verify data entry required in the asset/liability modeling, cash flow forecasting, pricing analysis, and other key computational ALM operations. Required analytical processes for certain strategies, such as hedge ratio calculations or mortgage-derivative analytics, should also be documented. Processes should be in place to confirm that individual strategies or transactions are not in violation of NCUA Regulations and those of other agencies.

Other procedures are necessary to accommodate the ALM function at certain institutions. These should be assessed on a case-by-case basis.

Internal Controls

In small corporates, lack of adequate internal controls may be more likely because of the probability an individual may be performing multiple incompatible functions (i.e.,, a senior manager may not only be involved in ALCO decisions, but may also execute transactions, oversee the disbursement of cash, and authorize the related accounting entries). Examiners should take exception where the organizational structure does not provide for sufficient segregation of duties. Critical responsibilities must be properly separated to ensure adequate internal control.

Examiners should also verify that internal controls in the ALM function are adequate in the following areas: transaction authorizations - both internal (officers authorized to transact business) and external (approved dealers, for example); position/transaction limits; regulatory requirements or limits; and other guidelines. The policies and procedures for the individual financial functions usually elaborate on these control features.

Executing ALM Strategies & Decisions: The Financial Functions

Structured appropriately, the ALM decision-making process should result in effective strategies to guide an institution toward achieving its overall financial objectives. These strategies are then implemented by the financial functions, which are the portfolio-level operations that carry out three elements of the ALM process: (1) funds management and pricing; (2) risk management; and (3) earnings/value management.

Examiners should review the procedures for communicating actionable decisions to the functional areas, and the reports generated for the board, which summarize the nature and purpose of each major transaction. Additionally, examiners should look to the policies and procedures in each of the functional operations to verify that the strategies selected by the ALCO have been executed efficiently.

The Three Elements of the ALM Process

Funds Management and Pricing.

This element consists of the functions involved in the origination, purchase, sale, maturity, and/or other activities involving the flow of funds. Therefore, investment and liability management fall into this category. To ensure the most efficient and profitable movement of funds, cash management and liquidity management fall into this area.

The pricing of assets and liabilities is an integral part of funds management. Share and loan products are generally priced by management, while investments and borrowed funds are dictated by the market, hence, not controlled by management. As a result, the above pricing affects the management of funds in all portfolios (books of business), and the increase or decrease in the net funds flow.

The primary purpose of the ALM function is to coordinate funding and pricing decisions in order to optimize the integration of the financial functions. These decisions will then pave the way for the maximization of capital and the control of risk exposure.

Risk Management.

The attributes of the asset, liability, and off-balance-sheet portfolios will have a direct bearing on an institution's overall risk exposure. The maturity and pricing characteristics of each portfolio affect overall interest-rate-risk exposure, while earnings and capital strength impact liquidity risk.

Interest rate and liquidity risks are the primary risk management concerns of the ALCO. The measurement of interest-rate-risk is

discussed in the Interest-Rate-Risk Management section (below). Hedging and/or derivatives can be used to offset interest-rate-risk exposure.

Earnings/Value Management

A corporate's financial objectives are met by achieving desired returns, as measured by earnings or economic value, and by minimizing the variability of those returns. In the ALM context, earnings management primarily entails the management of the net interest margin (also called spread management), and value management refers to the management and stabilization of net economic value. The risk/return tradeoffs constantly facing management will have different implications for earnings and NEV.

Earnings and NEV management are closely related to pricing and risk management (discussed above). If, for example, the ALCO chooses to invest in only short-term Treasuries, these assets will be less profitable than more risky alternatives. However, the limited credit risk associated with this strategy will promote the stability of earnings and value. Another example, if the ALCO chooses a strategy that results in greater interest-rate-risk exposure, then future earnings variability will be heightened.

The spread management function is designed to maintain the net interest margin requirements of the institution. In this regard, it is crucial that the share pricing committee is under the purview of the ALM function. Finally, the management of capital markets activities and the computation of net economic value are crucial to the management and monitoring of an institution's overall NEV.

Interest Rate Risk Management

Introduction

Interest-rate risk is defined as the sensitivity of a depository institution's earnings and NEV to changes in interest rates. IRR results from the differences in the way the value of assets, liabilities, and off-balance-sheet instruments are affected by interest-rate changes.

The interest-rate sensitivity of a corporate's balance sheet depends on the characteristics of the financial instruments that make up the balance sheet. Corporates' share liabilities include a large percentage of overnight shares. Since shares typically reprice faster than investment assets, most corporates are exposed to rising interest rates. This means that their NEV and earnings decline when interest rates rise and increase when interest rates fall. However, there are some institutions that experience decreased earnings and declining net worth when interest rates fall, due to their balance sheet composition.

The interest-rate sensitivity of a financial instrument depends on many factors including: (1) maturity (generally, of two otherwise identical instruments, the one with the longer maturity will be more interest-rate sensitive); (2) repricing characteristics (instruments such as adjustable-rate bonds that reprice frequently to market interest rates are typically less interest-rate sensitive than fixed-rate instruments); and (3) the presence of embedded options, such as prepayments, interest-rate caps, and deposit withdrawal options that affect the timing of the cash flows generated by the instruments.

To properly evaluate the IRR exposure of a corporate, the effect of interest-rate changes on the entire balance sheet must be analyzed. It can be extremely misleading to conclude that an institution is highly exposed to IRR on the basis of a few very rate-sensitive instruments. In fact, the interest-rate sensitivity of those instruments may be offset by other instruments in the balance sheet that are less rate-sensitive, or are inversely affected by rate changes. Corporate investments may have a corresponding liability that has substantially similar characteristics and this permits the risks associated with the asset to be transferred to the holder of the liability (a "matched" transaction).

Both the board of directors and management of a corporate are responsible for the management of IRR.

In general, IRR management involves the following steps: choosing target measures (e.g., NII and NEV) for IRR management; setting limits on acceptable levels of interest-rate exposure for each target measure; estimating the interest-rate sensitivity of each target measure; and restructuring or hedging the balance sheet if the estimated interest-rate sensitivity exceeds the established exposure limits.

Summary of Section 704.8 (Limits on IRR)

The objective of IRR management is to control an institution's exposure to changes in interest rates to maintain adequate levels of earnings and capital over a range of possible interest-rate environments. Requirements for the management of IRR are established in 704.8(d). The board of directors is responsible for the development of a policy for controlling IRR. It is management's responsibility to ensure that the policy is successfully implemented by establishing adequate guidelines and procedures. Further, management is responsible for reporting the implementation and monitoring of such policy to the board on a periodic basis (at least quarterly for base case). The board shall review the results of operations and make adjustments to the policy as needed.

It is important to understand the responsibilities of management and the board of directors regarding the measurement and management of IRR. The following sections summarize those responsibilities.

Policy Statement

The board's policy statement shall include established limits on the institution's IRR exposure, identify the contents of reports to be made by management to the board, and specify the frequency the directors will review IRR management (at least quarterly per Section 704.8(d)). The delegation of responsibility for managing the institution's exposure to IRR should be clearly defined in the board's policy statement. Specific authorizations and restrictions should be provided regarding the institution's investment and trading activities (if any), the use of derivatives and synthetic instruments (corporates with Part IV authority), and hedging strategies.

Periodic Review

Periodic reports by management to the board of directors should demonstrate compliance with the exposure limits. Table 3 illustrates the type of interest-rate-sensitivity analysis that management should prepare to demonstrate compliance with its board's exposure limits. In columns [3] and [5], XYZ's management is reporting that neither NII nor NEV would be reduced by more than the percentages permitted by the board of directors, shown in columns [2] and [4], under any of the prescribed interest-rate environments. Finally, the levels of NII and NEV used as denominators in calculating columns [3] and [5] should be reported as memo items.

Measurements of the sensitivity of the institution's NII and NEV will be necessary for management to demonstrate compliance with the board of directors' limits on exposure (as in columns [3] and [5] of Table 3). A corporate should be able to explain the reasons for any large differences between their own NEV sensitivity estimates and those produced by a periodic independent third party review.

Table 3
Current Exposure of XYZ Corporate to Hypothetical Changes in Interest Rates

[1]	[2]	[3]	[4]	[5]
		Percentage Change		
Change In Interest Rates (in basis points)	Net Interest Income Board Limit	Projected Change	Net Economic Value Board Limit	Projected Change
+300	-75	-70	-50	-40
+200	-50	-30	-25	-15
+100	-20	-10	-10	-5
0	0	0	0	0
-100	-20	15	-10	10
-200	-50	35	-25	15
-300	-75	40	-50	15

Memo:
Net interest income projected under constant interest rates: $400
Net economic value under current interest rates: $1,000

Because any system of IRR management will rely on certain assumptions, management should document the assumptions underlying its interest-rate-sensitivity analysis and demonstrate to the board that they are reasonable. For example, management would need to explain how prepayments would be expected to behave under the various interest-rate scenarios and how they would affect the sensitivity measures. If more elaborate sensitivity analysis is used, the assumptions being made in that analysis should be discussed with the board and documented.

Requirements for NEV Models

This section describes the minimum requirements that NEV models used by institutions for regulatory compliance should meet. The requirements concern three general areas: (1) the items that are properly included in the NEV measure, (2) how cash flows are estimated in the base-case interest-rate environment and the alternate interest-rate environments, and (3) what discount rates should be used in the base-case and alternate-rate scenarios.

Items Included in NEV Measure

NEV should include the estimated present value (or "economic value") of all existing assets, liabilities, and off-balance-sheet items associated with the corporate's balance sheet. For example, the estimates will not include the value of new investments management projects it would make under the various interest-rate environments, or the value of new share accounts they believe the corporate will attract. It, however, should include the value of all off-balance-sheet instruments.

For their internal use, institutions may want to produce estimates of the interest-rate sensitivity of their balance sheets on a "going concern" basis, taking into account future business (e.g., interest rate "ramps"). For regulatory purposes, however, NEV should include only the value of existing instruments.

Estimation of Cash Flows

The cash flows of all instruments must be estimated separately for each interest-rate scenario. The cash flows of many financial instruments held by corporates change depending on the course of interest rates. It is not acceptable for institutions to estimate the cash flows of these instruments for the base case and assume those same cash flows would also be realized in the alternate interest-rate environments. NEV models should consider the fact that coupons on adjustable-rate investments and shares, mortgage prepayment rates, and core share decay rates will change depending on the interest-rate scenario. Institutions should document the mortgage prepayment rates and deposit decay rates assumed in each interest-rate scenario.

To the extent possible given their data systems, institutions should use disaggregated data to estimate the economic market value of their instruments. If sufficient information were available, each individual investment, share, etc., could be valued separately using information on amortization, coupon, maturity, and any options embedded in the instrument to estimate future cash flows. Corporates should disaggregate instruments to the extent practical, grouping similar instruments together.

For example, if not valued separately, fixed-rate mortgage backed pass-throughs, at a minimum, should be stratified into several coupon ranges (e.g., 7 to 8 percent, 8 to 9 percent, etc.). Adjustable-rate mortgage backed securities (ARMs) should be segregated by index type, adjustment frequency, and distance to the lifetime cap (for example, those close to their lifetime cap should be valued separately from those with rates, say 2 percent from their cap). Shares should be

segregated by type. This stratification permits the application of appropriate parameters (prepayment rates, decay rates, etc.) to each type of instrument and will result in more accurate economic value estimates.

Discount Rates

When estimating economic values, institutions should choose discount rates that reflect the risks of holding a particular instrument, including credit and liquidity risks. There are a number of possible methods of determining appropriate discount rates for financial instruments. The most common but least accurate method is to discount all future cash flows of a particular instrument by a constant discount rate that reflects the required yield of the instrument. For a typical upward-sloping term structure, this method overvalues long-term cash flows and undervalues short-term cash flows. A more accurate method involves discounting cash flows of different maturities by different discount rates. Under this method, the discount rate of any particular cash flow of a given maturity is equal to the estimated "risk-free" rate plus a fixed spread that compensates investors for the risk of holding the instrument. The risk-free rate for any given maturity cash flow is represented by the U.S. Treasury zero-coupon yield of the same maturity. The responsibility for choosing a particular discounting method resides with the institution. Like other assumptions necessary to calculate the NEV sensitivity estimates, the details and the rationale for the method chosen should be documented by the institution.

Management Strategy

The board and management are responsible for the institution's IRR management strategy and its implementation. They must understand the strategy and its possible effects on the short- and long-term financial health of the institution.

In formulating an IRR strategy, the board and management should consider the level of expertise needed to implement the strategy. A prudent IRR management strategy should be within the scope of existing management expertise. The corporate should not rely on speculative plans to remedy an excessive IRR exposure; nor should it incur excessive credit or liquidity risk to do so.

Steps taken to manage IRR may conflict with other business goals. To ensure such conflicts are minimized, management's IRR strategy should be developed in conjunction with the creation of a comprehensive business plan for the institution. It may well be that the profitability, financial structure and IRR targets an institution

would choose independently of one another are not attainable simultaneously. By developing these targets and the plans for achieving them as part of a single process, management can determine which combinations of targets are feasible and can make an informed choice among them.

Evaluating IRR Exposure

To be able to make meaningful judgments about the exposure of an institution to changes in interest rates, it is helpful to measure and compare its exposure with that of other institutions under a standardized framework. The framework adopted by NCUA for this purpose is to examine exposure in the context of how an institution's NEV would be affected by an instantaneous, adverse shift in interest rates of plus or minus 300 basis points. An adverse rate shock is defined as a 300-basis point increase or decrease in interest rates, whichever results in the larger decline in an institution's NEV.

The effect on NEV of an adverse rate shock is viewed relative to the size of the estimated present value of the institution's assets. An institution's "NEV ratio" is defined as its NEV divided by the present value of its assets (PVA), or:

$$\text{NEV Ratio} = \frac{\text{NEV}}{\text{PVA}}$$

Table 4

	Interest-Rate Scenario		
	-300 Basis Point Change	Base Case	+300 Basis Point Change
Present Value of Assets	$105	$100	$80
Present Value of Liabilities	-99	-95	-77
NEV	6	5	3
NEV ratio	5.7%	5%	3.8%

To detect excessive exposure, it is important to determine both the level to which an institution's NEV ratio is expected to decline as a result of an adverse change in interest rates as well as the magnitude of the decline in the ratio. This can be done through the use of two

measures: an exposure measure, which is also referred to as the "Post-Shock NEV Ratio," and a sensitivity measure, which is the decline in the NEV Ratio due to shock.

Exposure Measure

The post-shock NEV ratio is simply an institution's NEV ratio in the aftermath of an adverse interest-rate shock.

$$\text{Post-Shock NEV Ratio} = \frac{\text{NEV after Shock}}{\text{PVA after Shock}}$$

$$= \frac{\text{NEV +300}}{\text{PVA +300}} \text{ or } \frac{\text{NEV -300}}{\text{PVA -300}} \text{ whichever is lower}$$

The calculation of the post-shock NEV ratio is illustrated in Table 4, which shows the estimated change in the present value of the assets, liabilities, and capital accounts of XYZ Corporate resulting from a 300-basis-point increase and decrease in interest rates.

In Table 4, the adverse scenario is the one in which rates increase 300 basis points. Under that scenario, XYZ's NEV ratio declines to 3.8 percent. Thus, XYZ's post-shock NEV ratio is 3.8 percent.

Again, the post-shock NEV ratio is simply the NEV ratio that results from the most adverse 300-basis-point shift in rates. This ratio measures the core capital "cushion" expected to be left in a corporate should an adverse change in interest rates occur.

The post-shock NEV ratio is a function of the sensitivity of NEV to changes in rates and the size of the NEV cushion in the base-case scenario. Thus, an institution's post-shock NEV ratio could be low either because its balance sheet is very sensitive to changes in interest rates, causing it to lose a large portion of its NEV in an adverse interest-rate move, or because its base case NEV is low. Thus, a low post-shock NEV ratio is not necessarily an indication of high IRR; it may merely indicate that the corporate's base case NEV ratio is low.

Sensitivity Measure

The decline in NEV ratio due to shock measures the magnitude of loss that an institution would suffer from a specified, adverse move in interest rates. More specifically, it is the absolute percentage point decline in the NEV ratio that would result from a hypothetical 300-basis point change in interest rates. In the example above, XYZ's NEV ratio declines from the base case level of 5.0 to 3.8 percent as a result of a 300-basis-point increase in rates, a decline of 120 basis points. The decline in the NEV ratio is simply the *difference*, expressed in basis points, between an institution's base case NEV ratio and its post-shock NEV ratio (e.g., its NEV ratio under the adverse 300-basis-point shift in rates).

Taken alone, a large decline in the NEV ratio is not necessarily indicative of excessive risk. An institution with a strong capital position could experience a sharp decline in its NEV ratio, as a result of a 300-basis-point rate shock, and still be left with a substantial capital cushion.

In summary, exposure analysis can be viewed as a two-dimensional problem that involves estimating both the level to which an institution's NEV ratio will decline as a result of an adverse rate shock, as well as the extent of the decline.

Methods to Reduce Interest-Rate Risk

Institutions that project declines in earnings and NEV when interest rates increase may lower exposure by increasing the duration of liabilities or decreasing the duration of assets. This can be accomplished through balance sheet restructuring or hedging. Examples of measures such institutions might undertake include the following:

1. Sell securities;
2. Increase the proportion of short-term and adjustable-rate assets on the balance sheet;
3. Replace short-term funding with longer-term shares and borrowings;
4. Retain core shares, which are typically less interest-rate sensitive than CDs; and
5. Use derivative instruments (Part IV expanded authority), such as futures, options, interest-rate swaps, and caps, to lower exposure to IRR.

Although the majority of corporates are exposed to rising interest rates, there may be corporates that are exposed to falling rates. These

institutions could lower their exposure by restructuring their balance sheets to lengthen the duration of their assets or decrease the duration of their liabilities.

Liquidity Risk Management and Contingency Funding

Asset/Liability Perspective

Prudent asset/liability management requires a corporate to monitor cash flow and to manage liquidity risk. Cash flow refers to the process by which a corporate obtains and allocates its cash over time. Liquidity risk is the probability that a corporate will be unable to honor member requests for share withdrawal, to meet lines of credit or commitments already approved for members, to fund forward purchase agreements, to pay bills when due, to repay maturing share and borrowed money liabilities, or to pledge additional collateral for borrowing money. Liquidity risk embraces assets, liabilities, commitments, and collateral.

Liquidity Requirements

Liquidity management is the process a corporate uses to allocate its assets and structure its liabilities to provide sufficient liquidity to meet its needs and its shareholders' demands.

Liquidity management provides the foundation for a corporate's asset/liability system. Corporates provide credit and share services to accommodate members. An illiquid corporate may lose the confidence of its members and the financial markets. Managers must analyze growth, cyclical, seasonal, random, competitive, and regulatory elements to ensure that the risk of illiquidity does not outweigh pro forma earnings. Regulators must evaluate how management measures, monitors, and plans its cash flow and liquidity.

Cash flow analysis is related to earnings, but the two are not the same. A corporate may be in a positive earnings status but not liquid, or it may be liquid but not in a positive earnings status. Accounting accruals do not necessarily coincide with cash flow as illustrated below.

1. First, a zero-coupon or original-issue discount security may have been purchased to generate a 10 percent yield. Although the accounting system may periodically accrete the discount to maturity as income, no cash is received. The corporate will generate substantial cash inflow at maturity from the same security that is far in excess of that instrument's yield. Interest income and cash inflow are not synonymous.

2. Second, a corporate might pay 7 percent for savings and share certificates. If shareholders do not require the interest expense to be paid monthly because the interest is credited, the cash paid will be substantially less than interest expense accrued. The corporate will suffer a significantly greater cash outflow than interest expense when the shares are withdrawn. Interest expense and cash outflow are not necessarily synonymous.

3. Third, a corporate with Part IV authorities may hedge its assets or liabilities with a short position in interest-rate futures. If interest rates increase (decrease), the corporate will receive (pay) cash flow immediately, but must defer the gains (losses) over the life of the instrument hedged. Hedging does not necessarily generate cash flows that are the opposite of the targeted instrument for an IRR reduction.

From a financial perspective, management must provide an asset/liability structure that generates positive earnings based on accrual accounting and sufficient cash flow to meet the demands imposed by members, the financial markets, and regulations.

Cash flow is also related to IRR management. The two are not the same. The potential repricing of an asset or liability does not imply the instrument is maturing. Similar to cash flow and earnings, the two factors are partially related as illustrated below.

1. A corporate might purchase an MBS backed by adjustable-rate mortgages (ARMs) with a one-year repricing interval. If the ARMs' interest rate index increases, the monthly cash inflow from the loans will increase up to the ceiling imposed by annual and lifetime rate caps. However, the corporate still has its funds invested in ARMs and does not have the same asset flexibility as if the loans were paid off or called at the end of the year.

2. Most mortgage loans backing MBSs include a prepayment option. Mortgagors are much more (less) likely to exercise that option when interest rates decrease (increase). Consequently, corporates receive back relatively more cash when prepayment activity is high and reinvestment alternatives are poor, yet receive relatively less cash when prepayments slow down and reinvestment alternatives are good. Cash flow can move in a contrary direction from what is otherwise desired to manage IRR.
3. Fixed-rate shareholders are more likely to withdraw accounts and incur substantial early withdrawal penalties if interest rates have increased sufficiently to make it attractive to reinvest funds elsewhere. A fixed-rate, long-term account may become rate

sensitive and require payout when a corporate least wants to locate another source of funds, in a high interest rate environment. By contrast, high-rate shares are rarely withdrawn early when rates drop.

4. Corporates with derivatives authority may hedge their IRR exposure by a variety of instruments. For example, a corporate might purchase a put option or an interest-rate cap. In either case, a corporate pays an initial fee in cash and may later receive cash back if interest rates increase sufficiently beyond a strike price or threshold level. The cash outflow precedes any later potential protection and cash inflow.

From a financial perspective, management must recognize that an asset/liability structure capable of controlling IRR does not necessarily generate an adequate cash flow.

Finally, cash flow relates to capital management. Corporates operating with significant levels of reserves and undivided earnings do not have the same cash flow pressure as highly leveraged corporates.

1. First, capital accounts generally do not have a stated maturity. No return of capital is required.

2. Second, dividend payments on contributed capital (member capital) and repurchase of member capital is discretionary. No return on member capital is specified (dividend is on an ability-to-pay basis). Paid-in capital may also be repurchased (called) on a discretionary basis but the dividend is more likely to be contractually specified.

These last statements cannot be interpreted to indicate that capital is a free source of funds. Management and shareholders expect capital to be used efficiently with good NEV appreciation and a satisfactory level of share dividends (remember that members receive their return on investment through dividends on their shares as well as growth in NEV). However, the return need not necessarily result in a cash outflow as needed to pay contractual interest on debt and to repay contractual principal at maturity. Some shareholders prefer that management retain earnings if the corporate is able to generate a high return on equity (better rates and services may result from a stronger capital base). It should be obvious that cash flow and liquidity management are integrally affected by an corporate's asset/liability structure.

Members' Role in Liquidity Management

Almost all corporate business is member oriented. Consequently, the role of borrowers and shareholder must be understood clearly by a corporate if liquidity is to be managed. Examiners should recognize that the cash flow and liquidity requirements may differ among corporates based on the type of member relationships.

Corporates solicit shares from members and invest in high quality investments. The cheapest funds a corporate receives are often derived from short-term shares. When members initiate and control short-term share behavior, liquidity management becomes more difficult. A corporate must be prepared to respond to an immediate surge in member withdrawals and/or demand for borrowed funds since it specifically serves that fiduciary role for its members. Corporates can only obtain longer term liquidity by obtaining longer term liabilities from members and storing it in assets that have cash convertibility (may be sold or pledged as collateral). If corporates have only short-term funds subject to immediate withdrawal, liquidity management requires that assets be highly liquid.

While a corporate does not have to respond to the specific needs of each member, it must respond to aggregate shifts in which member adjustments do not cancel out. Differences in the rate of growth of shares and the structure of investments may precipitate liquidity problems.

When a corporate mismatches overnight funds with longer duration assets and experiences withdrawals, it must shift the burden of liquidity management to the investment and funding operations conducted in the open financial markets. The corporate must draw down cash, sell securities, or borrow money. These actions may reduce visible liquidity (i.e., cash and short-term marketable securities) and invisible liquidity (i.e., remaining borrowing capacity). By contrast, when shares are growing, a corporate is generating excess funds, cash may be replenished, securities may be invested, and borrowed money repaid.

Management's Responsibilities in Liquidity Management

A corporate must ensure sufficient liquidity is always available. Sufficient liquidity depends on the overall asset/liability structure of the corporate, the condition of the economy, the activities of financial service competitors, and the requirements of its own members.

An examiner must evaluate cash flow and liquidity management of a corporate to ensure that management has the following:

1. Reports that measure the anticipated excess/deficient cash position of the corporate relative to member needs;
2. Policies that address how a corporate expects to manage its visible and invisible liquidity position; and
3. Pro forma financial statements that accompany a business plan that reflect that adequate liquidity will be available to effect strategic change.

Liquidity management requires that a corporate use sound financial and marketing techniques. The subsequent sections identify more fully the cash flow characteristics of assets, liabilities, and commitments within a corporate. The topics are addressed within a return/risk trade-off. These include:

1. Relative maturity schedules of assets and liabilities;
2. Options included in asset/liability products that complicate liquidity management;
3. Off-balance-sheet commitments outstanding;
4. Interest income/expense associated with assets and liability products of varying liquidity; and
5. Operating expenses associated with products of varying liquidity.

A corporate needs cash and access to liquidity when needed, but not excessive cash or liquidity since earnings may be reduced.

Section 704.5(a)(2) of NCUA Rules and Regulations requires a corporate's investment policy address reasonable and supportable concentration limits for limited liquidity investments in relation to capital. Limited liquidity investments are defined as a "private placement or funding agreement."

Assets and Liquidity

Measurement

To maximize its net interest margin, a corporate should make adequate, but not excessive, liquidity provisions. Earnings and liquidity are often conflicting objectives. By making excessive provision for liquidity, management may forgo potential earnings. By making inadequate provision for liquidity, management could threaten the very existence of the corporate.

Liquidity is a relative quality. There is a wide spectrum of relative liquidity in both assets and in liabilities. Asset liquidity may be measured two ways. First, how easily can an asset be converted to cash by sale in a secondary market or by using it as collateral to borrow money? Second, what certain cash flow will assets generate?

Marketability

Marketability allows a corporate to obtain cash prior to an asset's maturity. The liquidity of an asset is characterized by the speed with which a security can be sold at a price near the last trade. Liquidity is influenced by the asset's market depth, breadth, and resiliency. Deep, broad, resilient markets are liquid.

1. Depth is illustrated by the existence of orders above and below the price at which a security is trading. A deep market also may be characterized by a large order size for the best bid and best offer.

2. Breadth is illustrated by the existence of a substantial volume of potential investors. Broad markets are more stable than markets dependent on a few key investors when transitory order imbalances occur.

3. Resiliency is illustrated by the speed with which new orders occur from a price change or order imbalance. Liquid markets are characterized by small price impacts as a large order is executed in sequential transactions.

Asset liquidity - that is, depth, breadth, and resiliency - is affected by the market in which it is bought and sold. Assets tend to be most liquid in auction and dealer markets, less liquid in broker markets, and least liquid in a direct-search market. Examiners should evaluate how management selects and monitors assets according to the market in which they trade.

Maturity and Duration

Maturity is a key attribute of relative liquidity of an asset. A short-term asset is inherently more liquid than a long-term one. The secondary market for U.S. Treasury securities is deep, broad, and resilient. But longer term U.S. Treasury Bonds carry a risk of a larger loss than short-term U.S. Treasury Bills when interest rates increase. A corporate may be reluctant to record an accounting loss in its financial statements. Therefore, long-term securities are less likely to be converted to cash when interest rates increase, as they do during a period of economic expansion or inflation. Further, less cash is received from the sale of a long term bond after an interest-rate increase. Table 5, illustrates how the price of several bonds of different maturity might react to an interest-rate change. Short-term securities may be considered liquid because they either mature quickly or may be sold with little loss given a minimal increase in required yields.

The potential price change of a security is heavily influenced by maturity. However, the percentage price change of a security is more closely related to its duration than maturity. Duration measures the time weighted cash flows of a security where the weighting is provided by present value. Short duration assets, not simply short-maturity assets, generally are more liquid than long-duration assets. The duration of an asset is shorter with a short-term maturity, high periodic interest or principal receipts and frequent cash flows.

Table 5

Security Price Change and Interest-Rate Shift: Maturity

($1,000 Par, 8% Coupon Security)

Maturity	$ Price @ 8 %	$ Price @ 9 %	% Price Change
1 Year	$1,000	$990	1.0 %
5 Year	$1,000	$960	4.0 %
20 Years	$1,000	$908	9.2 %

Table 6 shows how the percentage price change of three bonds might react to a 1 percent increase in interest rates. The short-term maturity bond has the largest percentage price reaction because it has the longest duration. The maturity, the level of contract payments or coupon, and the payment frequency all affect asset liquidity. Duration provides a more comprehensive surrogate for cash flow than maturity. Either measure significantly affects the cash flow of assets. Examiners

should evaluate how management measures and monitors the relative maturity and/or duration of assets.

Table 6

Security Price Change and Interest-Rate Shift: Duration ($1,000 Par)

Maturity	Coupon	$ Price @ 8 %	$ Price @ 9 %	% Price Change
7 Years	0 %	$ 534	$ 494	7.5 %
10 Years	8 %	1,000	935	6.5 %
12 Years	15 %	1,534	1,435	6.4 %

Credit Risk

Another factor affecting cash flow and liquidity management is the default risk of an asset. Assets with more certainty of return enhance liquidity. For this reason, default free securities, issued or guaranteed with the full faith and credit of the U.S. Treasury (e.g., U.S. Treasury bills, notes, and bonds and Government National Mortgage Association [GNMA] securities) are more liquid than similar securities that are privately issued. Next, securities issued or guaranteed by Government Sponsored Enterprises (GSEs) (e.g., Federal National Mortgage Association [FNMA], Federal Home Loan Mortgage Corporation [FHLMC], and Federal Home Loan Bank [FHLB]) are viewed as default remote).

Obligations of financial institutions (e.g., federal funds, certificates of deposit [CDs], and bankers acceptances), corporations (e.g., commercial paper or corporate bonds), and state and local governments (e.g., general obligation or revenue bonds) must be evaluated for credit risk.

An investment-grade bond suitable for providing liquidity means the security has low market and credit risk. As illustrated in Table 7, the top four letter grades assigned to corporate bonds by Moody's Investors Service and Standard & Poor's Corporation are defined to indicate a level of credit risk.

Table 7

Credit Quality and Rating Grades

Moody's	S&P	Credit Quality
Aaa	AAA	Prime Quality
Aa	AA	High Grade
A	A	Upper Medium
Baa	BBB	Medium Grade

The differential in yield and risk is most pronounced between the third and fourth grades. If a medium grade bond is downgraded to Ba or BB, the market no longer considers its investment quality. In general, a corporate may not retain low-grade bonds. However, there are some circumstances under which a corporate may be able to retain a low-grade security. For example, depending upon the individual corporate's expanded and/or operating authority level, and the specific security, Section 704.10 (Investment Action Plans) provides for the possibility of retaining low-grade securities. For the most part, corporates are limited to the most high grade instruments which afford the greatest relative liquidity within the credit risk spectrum.

Investment-grade corporate bonds do default. For example, Johns Manville, LTV, and Braniff, among many other issuers, have defaulted on their bonds even though they were each once assigned a single-A or better grade. There is a distinct difference in credit quality and yield between a prime quality bond (AAA or Aaa) and a medium-grade bond (BBB or Baa).

Liquidity from cash flow requires assets to have not only a short duration but low credit risk. Management must set limits on the credit-risk exposure of its assets. Securities with high credit risk are more likely to have cash flow problems. By definition, low-grade corporate bonds have a higher probability of default and, therefore, could suffer an interruption of cash flow.

Most corporates have some credit exposure that results from corporate bonds, commercial paper, asset-backed securities, federal funds sold, or certificates of deposit from insured banks. The FDIC periodically has favored a policy under which uninsured shareholders face losing a portion of their funds when a troubled bank is liquidated. Banks traditionally had a low rate of failure, compared with other industries, until the early 1980s. Although economic factors affect bank liquidation, variations in operating performance usually can be traced to management. Ratios that measure the financial condition and

operations of a bank have been found to have limited predictive power to discriminate problem and failed banks from sound institutions.

Uneven earnings is a key factor indicating the riskiness of a commercial bank. An approved list of acceptable commercial banks should be based on financial ratios and should incorporate some analysis of the accompanying risks. A simple method of managing credit risk of banks by corporates is to restrict investment to the insured portion. Such a strategy may not be practical for larger corporates.

Each corporate with uninsured bank deposit exposure should establish, monitor, and update an approved list of accepted commercial banks. The approved list should include commercial banks displaying adequate capital, consistent earnings, acceptable credit quality, prudent growth, and multiple sources of liquidity. The list should be reviewed at least annually (quarterly for banks where large demand deposits, federal funds sold, or CD exposure exists).

Liquidity risk and credit risk are highly correlated. Examiners should see how management categorizes its assets according to credit risk and classification standards.

Prepayment

All corporate institutions investing, trading, or selling transactions with MBSs must be concerned with the anticipated life of such instruments. Prepayments affect the investment life, pricing, earnings, and value of loans. Prepayments also affect cash flow. Loans prepaying provide a cash flow earlier than scheduled amortization.

A mortgage may be prepaid due to a variety of factors, including:

1. Seasoning - when mortgagors have paid their mortgage for several years and are more likely to seek a new home or to refinance;
2. Refinancing - when mortgagors are able to obtain a new loan at least 150-200 basis points less than their existing contract rate;
3. Default - which tends to remain high until a fixed payment loan is seasoned with three years or more of satisfactory payments; and
4. Disaster - which may occur from destruction of the property by fire or flood, or from death or disability of the owner.

Prepayment experience also is affected by legal, geographic, and seasonal factors. For example, GNMA securities backed by FHA/VA loans tend to prepay more slowly than other agency pass-through securities because the FHA/VA mortgages historically are less mobile

and the underlying loans are smaller; therefore, there is not as great a dollar incentive to refinance. Similarly, certain geographic areas that experience growth, high professional employment mobility, or retirement migration patterns also prepay more quickly. Variations in a region's economic base can change prepayment activity. Finally, the peak housing activity during the spring and summer months translate directly to prepayment seasonality.

Long-term corporate bonds with embedded options are also subject to prepayments. A call option allows a bond's issuer to retire a bond prior to maturity. Calls are often exercised when interest rates have declined and allow the issuer to refinance the debt prior to maturity at a lower coupon than currently being paid. A put option allows an investor to resell the bond to the issuer, typically at par, prior to maturity should interest rates increase. Calls are very similar to prepayments of mortgage-backed securities (MBSs); a corporate receives back cash when it least wants to reinvest cash, that being a low-interest-rate environment.

As illustrated in Table 8, the relative cash flow and liquidity of assets vary according to a continuum. As management invests in more liquid assets, interest income tends to decline.

Table 8

Asset Liquidity Characteristics

Attribute	Most Liquid	Liquid	Least Liquid
Maturity	<1 Year	<5 Years	>Than 10 Yrs.
Coupon Payment	High	Low	0
Frequency	Monthly	Semiannual	No Coupons
Credit Risk	U.S. Treasury/ Agency	Top 4 Grade	Low Grade
Market	Auction/Dealer	Broker	Direct Search

Management Considerations

A corporate should increase its asset liquidity, short-term, default free or remote, and highly marketable securities when other parts of asset/liability structure are less liquid or place uncertain liquidity demands on the corporate. For example, strong financial arguments exist to increase the proportion of liquid assets when the amount of:

1. Long-duration assets (e.g., zero-coupon bonds) increase;
2. Fixed assets (e.g., equipment, furnishings, or real estate) increase;

3. Assets trading in a broker market (e.g., derivative MBS) increase;
4. Lines of credit or standby letters of credit issued increase;
5. Assets available for pledging against a liability are few;
6. Capital is low or negative and member confidence is threatened;
7. Funding by short-term brokered CDs or uninsured CDs increases;
8. Funding by repurchase agreements or dollar rolls increase;
9. Funding by collateralized borrowed money increases;
10. Hedging with interest-rate futures increases; or
11. Interest-rate risk, as measured by NEV, increases.

Corporates should commit relatively more funds to highly liquid assets whenever the following occur:

1. A large portion of other assets are less marketable or have distant cash flows;
2. Liabilities or shares are subject to disintermediation;
3. Significant commitments to purchase securities or originate loans are outstanding;
4. Little additional access to the financial markets is likely; or
5. Market and member confidence is threatened.

More liquid assets may be used to balance the risk of other financial assets or financial liabilities that are designed to enhance earnings, yet carry more risk.

Such an investment strategy mitigates some of the liquidity pressure otherwise present. The earnings penalty incurred by investing in liquid assets often is offset by other illiquid assets with a long duration, little marketability, or high credit-risk exposure that carry higher yields. Further, short-term liabilities and wholesale shares often cost less than longer-term accounts and also may offset the earnings penalty from the additional investment in liquid assets.

Management need not only increase the proportion of short-term, default free assets to enhance liquidity. Liquidity carries a potential earnings penalty. The following are examples of how a corporate can enhance liquidity, while not increasing its investment in short-term, default free instruments;

1. Emphasize core member accounts and intermediate-term shares;
2. Emphasize securities that have predictable, consistent, and homogeneous prepayment or call risk;
3. Maintain assets suitable for pledging against a wholesale corporate advance or a reverse repurchase agreement;
4. Maintain an unused line of credit with a wholesale corporate or a commercial bank;

5. Emphasize securities that are similar to products trading in dealer markets (e.g., MBSs or public agencies); or
6. Sell and lease back the corporate's office building.

Liquidity management allows a corporate to respond to anticipated or unanticipated cash flow deficiencies. Liquidity management must consider the entire asset/liability structure.

Liabilities and Liquidity

Measurement

Member - initiated sources and uses of funds provide the foundation for liquidity risk management. When loan demand exceeds normal share growth, management must rely on access to borrowed money or the sale of securities to raise needed cash. Similarly, corporates may reduce reliance on borrowed money and increase temporary investments when the reverse occurs.

A corporate has several alternatives to raise cash through liability management.

Like assets, maturity is a key to relative liquidity. However, reliance on short-term liabilities requires more liquidity than reliance on long-term liabilities. Members have the legal right to withdraw funds or force repayment at maturity. Liquidity risk is increased when management relies on three-month certificates rather than three-year certificates. Liquidity risk is also increased when management relies on short-term borrowing as opposed to longer term advances. Shorter-term liabilities increase liquidity risk. Such liabilities also tend to cost less since they should be priced off the short-term end of the yield curve.

Shares - Some share accounts may be withdrawn immediately, or on demand, yet do not necessarily cause an increase in liquidity risk. Although a specific member may withdraw funds immediately, another member may reinvest a like amount of funds. A corporate does not have to respond to the specific needs of each member; it must respond to net aggregate shifts in shares. Clearing accounts may provide a corporate with a very long-term source of funds because members must maintain constant balances to cover daily settlement activities. The account may be considered a core share. Core shares are extremely important when measuring liquidity risk. Core shares are placed by members for reasons principally related to the financial services and the convenience offered by the corporate, rather than simply the interest rate paid. A corporate will lose core shares over

time if services or dividend rates become non-competitive. In addition to clearing accounts, membership capital shares and paid-in-capital, a portion of regular overnight shares, and share certificates may be considered core shares if supported by proper analysis.

By contrast, other shares require more liquidity because investors have selected a specific account and a specific corporate for one reason, it offers the highest rate of interest. When management posts a lower rate, volatile, or wholesale funds disappear. Volatile liabilities increase liquidity risk. However, a corporate temporarily may meet liquidity needs by posting high interest rates. Management and examiners should distinguish core shares from volatile shares.

Many core share accounts carry high average operating expenses and low share balances. Corporates may more quickly raise desired amounts of funds through the wholesale share market or by borrowed money.

Each corporate must determine for itself whether the advantages of borrowed money exceed the attendant costs. One of the constraints that limits the advantage of borrowing funds is the minimum capital ratio (borrowed funds grow the balance sheet and increase the assets relative to capital). Examiners should review the corporate's related calculations.

Although most corporates choose not to borrow funds, borrowing can be an attractive funding alternative to regular shares. Even when the borrowed money carries higher interest rates than shares, the interest expense is limited to the incremental funds raised, not total funds. An arithmetic example illustrates the difference. Assume a corporate needs to quickly increase cash by 10 percent. In order to acquire the new funds, the corporate believes it must post higher interest rates for all of its share products by 1/8 of 1 percent. For each $10 million of total shares, interest expense thereby increases $12,500 annually. The incremental interest incurred amounts to 1.25 percent for the desired $1 million (10 percent of the $10 million shares). The desired growth could have been more cheaply obtained by borrowed money if its cost was no more expensive than 1.25 percent above the current share rate. Table 9, illustrates various combinations of incremental interest rates needed to attract share funds and targeted growth. The indicated values show how much extra a corporate could pay for borrowed money than shares and break even.

Table 9
Borrowed Money Break-Even Analysis

Incremental Share	Funding Growth

Rate Increase to Obtain Growth	5%	10%	15%
1/8 of 1%	2.5%	1.25%	.83%
1/4 of 1%	5.00	2.50	1.67
1/2 of 1%	10.00	5.00	3.33

The interest rate differential that can be paid and still break even for borrowed money increases when the corporate otherwise needs to post a higher rate for all savings, or the amount of incremental growth is relatively small. Borrowed money is best viewed as a source of incremental funds to meet liquidity needs.

Management Considerations

Corporates may generate cash flow and manage liquidity through shares and borrowed money. The corporate system's ability to attract shares is also affected by factors external to the actions of a specific corporate. These include:

1. Economic growth and regional booms (loan growth uses up excess liquidity);
2. Decline in personal savings ratios for members of natural person credit unions;
3. Perceived strengths and weaknesses of the corporate credit union system; and
4. Competition from other financial institutions.

If management has a specific need for funds, corporates may need to borrow money to obtain cash.

There are a wide variety of specific liabilities corporates may use. Rather than describe each one, the following listing categorizes types of financings that may be used to generate cash.

1. Repurchase Agreements/Dollar Rolls: by selling securities through a reverse repurchase agreement or a dollar roll, the corporate sells a security and simultaneously agrees to purchase the same or a similar security at the end of the agreement e.g., a week or month.

2. Commercial paper: by issuing commercial paper, the corporate raises non-insured funds from investors, typically with a maximum maturity of 270 days. Some corporates keep a constant amount of commercial paper issued to maintain a market presence.

3. Medium-Term Notes (MTNs): by issuing MTNs in the marketplace, the corporate raises funds from investors for several years.

More specialized securities provide for specific cash flows to appeal to certain investors. However, more specific cash flows limit the subsequent marketability of an issue unless information is easily available about the cash flows and the issue is similar to others. A corporate should be concerned with the secondary market of its liabilities because more marketable securities carry less risk to investors and thereby reduce the interest cost. For this reason, a $100 million liability issue may carry a five basis point lower cost than a $50 million issue. Management should have a plan for accessing borrowed money over time. Examiners should review the plans to ensure there is adequate liquidity, and that other risks affecting asset/liability structure are not exacerbated. Liquidity management is also affected by the existence of commitments and hedging instruments.

Commitments and Liquidity

Corporates often own assets and acquire shares with options that complicate cash flow planning. Table 10, illustrates the cash flow consequence of a change in interest rates for these accounts.

Rising interest rates affect assets and liabilities. Therefore, the corporate may have to search for more sources of cash when it is least desirable. (i.e., during a period of high rates). Options made available to members greatly complicate cash flow planning.

Hedging may partially offset IRR and some liquidity risk. Hedging does affect the cash flows of a corporate. Hedging may increase the perceived liquidity of an asset because the transaction reduces the corporate's reluctance to sell an asset at a loss. The hedge should provide an approximate offsetting gain.

Table 10

Cash Flow and Interest-Rate Change*

Account	Option	Effect of Rising Rates	Effect of Falling Rates
Corporate Bond	Call Feature	No Call	Call (+)
Term Share	Early Withdrawal	Withdrawn(-)	No Change

*(+) Cash Inflow; (-) Cash Outflow

Asset/Liability Structure and Cash Flow

Cash Budgeting

Corporates should develop pro forma cash budgets to ensure cash or liquidity will be available in the future. The uncertainty created by mortgage backed security prepayments, fixed-rate commitments and share withdrawal reduce the confidence of a cash budget being realized. Therefore, examiners should determine how management anticipates cash flows in the future.

Section 704.8 (ALM): Interpretation and Examples

Prudent risk managers view regulatory requirements as a *minimum* standard. Examiners should expect corporates' risk managers to manage to best practices, not the regulation, so long as those practices do not contradict or ignore regulatory requirements. Where appropriate, a corporate will need to develop additional tests, methodologies, and procedures to manage its risk (additional means beyond the minimum requirements of regulation). Corporate management may fail its basic fiduciary responsibilities if it limits its risk management to only regulatory compliance.

ALM policies may be integrated with the investment policies (or vice versa). In addition, it is acceptable to have all financial risk policies combined into one source so long as the unique considerations of each area are addressed and the respective procedures are in place.

Section 704.8(a) addresses the ALM policy requirements for corporates. Note that it uses the term "at a minimum" in describing policy stipulations.

1. The purpose and objectives of the policy should be consistent with the risk tolerance and risk management philosophy of the organization. The examination review will need to consider if management's actions and performance are consistent with this statement.

2. The policy must address the "tests that will be used to evaluate instruments prior to purchase." This requirement is integral with the investment policy (prudent portfolio selection criteria would

automatically require this discipline). Corporates have an obligation to develop appropriate criteria for investments. Testing can estimate the impact of a credit migration or default. Analysis of creditworthiness includes probability of default in various scenarios. Testing may also measure the relative liquidity for a type of transaction (depth of market and price risk). The type of tests required will be a function of an investment's complexity, structure, and/or acceptance in the general marketplace. Before a corporate can buy/sell a new investment type (new in the market or new to the corporate), it must develop appropriate analyses and test parameters and modify its ALM policy *before* engaging in the activity. The type of investments will determine the types of tests that are appropriate. For example, a shock test would not be expected for an overnight Fed Funds transaction although the credit analysis of the counterparty would be expected. Interest rate stress tests would be required for instruments such as structured share certificates or mortgage backed securities.

3. The policy must address "the maximum allowable percentage decline in NEV, compared to current NEV." Current NEV refers to the base case NEV at the time of the test. A simple example of how this information can be communicated is provided in Table 11 on the following page.

Table 11

Change in Interest Rates (in basis points)	Maximum Permissible Change in: Net Economic Value (Board Limit)	Net Economic Value (Regulation)
+300	-13.0%	-15%
+200	-10.0%	-15%
+100	-5.0%	-15%
0	-	-
-100	-5.0%	-15%
-200	-10.0%	-15%
-300	-13.0%	-15%

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4. The policy is required to include "the minimum allowable NEV ratio." Corporates are required in Section 704.8(d)(1) to limit its risk exposure to (1) levels that do not result in a base case NEV ratio of any NEV ratio resulting from the tests…below 2 percent" and (2) "levels that do not result in a decline in NEV or more than 15 percent.". The board is expected to prescribe the corporate's NEV policy limit within the regulatory limit. An example of how this information might be presented is included in Table 12.

   The effect on NEV of an adverse change in market rates (measured with rate shocks) is measured relative to the size of the estimated present value of the corporate's assets. Thus, the NEV ratio is defined as NEV divided by the fair value of assets, or:

$$\text{NEV Ratio} = \frac{\text{NEV}}{FV_{\text{ASSETS}}}$$

Table 12
Interest Rate Scenario

	- 300 BP Change	Base Case	+ 300 BP Change
Present Value of Assets	$104	$100	$80
Present Value of Liabilities	-99	-97	-78
NEV	5	3	2
NEV Ratio	4.8%	3.0%	2.5%
Minimum NEV Ratio Policy Minimum	2.0%	2.0%	2.0%

5. The policy must address "limits and specific test parameters for the IRR simulation tests" set forth in Section 704-8(d) which deals with rate shock analysis on NEV and the NEV ratio

   These factors have already been addressed by 3 and 4 above. However, corporates are also required by Section 704.8(d)(2) to "access annually if it should conduct periodic additional tests to address market factors that may materially impact that corporate credit union's NEV." The factors should include, as appropriate:

   1. Changes in the shape of the Treasury yield curve;
   2. Adjustments to projections used for amortizing securities to consider the impact of significantly faster/slower prepayment speeds;
   3. Adjustments to the market spread assumptions for non Treasury instruments to consider the impact of widening spreads; and
   4. Adjustments to volatility assumptions to consider the impact that changing volatilities have on embedded option values.

   The regulation does not establish specific targets or ranges for these extra tests. It is the responsibility of the board to (1) decide how these tests should be conducted, (2) determine the frequency of the additional tests, and (3) place appropriate parameters and limits upon exposures to these particular market risks. Parallel, instantaneous and sustained shocks in the yield curve address a

majority, but not all, potential market risks. Rate shocks do not capture the full spectrum of market risks and additional tests are intended to provide a more rigorous assessment. For example, a change in market volatility is not captured in a rate shock and significant value changes in options could therefore be missed.

The examination review of this area must consider the relevance and appropriate frequency of the additional tests and determine if the limits appear consistent with the overall board philosophy on risk. For example, if a corporate portfolio has no prepayment optionally to speak of, tests for prepayment changes would be meaningless. If, on the other hand, a corporate portfolio is heavily weighted in asset-backed securities (or some other non-Treasury "spread" product), the test for changes in market spreads will be essential.

6. Certain market indexes (e.g., LIBOR, PRIME, COFI and CMT) serve as references for computing periodic interest payments on structured share certificates and securities. When buying instruments that contain interest coupon payment formulas tied to market indexes, the corporate needs to obtain reasonable projections for future index levels. This is necessary to compute NEV for the various interest rate tests. Corporates are expected to place greater attention on projections of those indexes which are not market determined rates (such as PRIME and COFI). Correlation analyses, which demonstrate the relationship between the non-market indexes and market rates, is a major component of most index forecasts.

Mortgage-Backed Securities & Mortgage-Backed Derivative Products

Mortgage-backed securities (MBS) can represent a substantial portion of a corporate's investment portfolio due to their ease of trading and liquidity. Appendix 202A provides additional information on MBS and their use as derivative products.

Derivative Instruments

Appendix B to Part 704 authorizes corporates which apply for and receive Part IV Expanded Authority to engage in derivative activities. Appendix 202B provides additional background information on derivative products that may be used by corporates with this expanded authority.

ALM Examination Objectives

The objectives of the ALM review are to:

1. Determine if policies, procedures, and strategic plans regarding cash flow and liquidity management adequately address safety and soundness, earnings, and compliance with laws and regulations.

2. Determine if the corporate has complied with the regulatory liquidity measurement and monitoring requirements of Part 704. Determine that liquidity management evaluates: the potential liquidity needs of members; regularly monitors sources of internal and external liquidity; and sets accounting classification of securities consistent with the potential liquidity demands.

3. Determine if the contingency funding plan adequately addresses alternative funding strategies in successively deteriorating liquidity scenarios, and that assumptions utilized are reasonable and supportable.

4. Determine if reasonable parameters have been established for the corporate's NEV position, the corporate is operating within established parameters, and the parameters are reasonable.

5. Identify weaknesses in the IRR measurement systems, internal management reporting, or internal controls.

6. Evaluate plans for reducing excessive IRR, if applicable.

7. Evaluate the management of the corporate's assets and liabilities.

8. Determine if internal management reports provide the necessary information for informed funds management decisions and for monitoring the results of those decisions.

9. Initiate corrective action when ALM policies, procedures, practices, and internal controls are deficient.

MBS & MDP Examination Objectives

The objectives of the mortgage-backed securities and mortgage-derivative products (MDP) review are to:

1. Determine that the investment and ALM policies and business plan adequately describe the type and level of investment in MBSs and MDPs and the rationale for the investments.

2. Determine that the board has approved the type of investments in MBSs or MDPs and that it has established reasonable limits on the level of MBSs or MDPs that can be retained in the portfolio.

3. Determine if management is operating in conformance with established policies and has the necessary expertise to execute the authorized strategies.

4. Determine if management has adequately analyzed its investment in MBSs and MDPs prior to purchase, and that these investments are appropriate based on the corporate's current portfolio, asset/liability structure, and capital position.

5. Determine if the corporate actively monitors its investment in MBSs and MDPs.

6. Determine management's compliance with Section 704.5.

7. Determine that transactions are recorded according to GAAP.

8. Determine if the corporate has incurred any significant interest-rate or prepayment risk from its investment in MBSs or MDPs.

9. Initiate corrective actions when policies, procedures, practices, and internal controls are deficient.

Derivative Instruments Examination Objectives

The objectives of the derivative instrument review are to:

1. Determine that ALM policies and the business plan adequately describe the type and level of derivative activities.

2. Determine if management is operating in conformance with established policies and has the necessary expertise to execute the derivative instruments.

3. Determine that management has adequately analyzed its derivative instruments prior to the transactions and assessed that they are

appropriate based on the corporates portfolio, asset/liability structure, and capital position.

4. Determine that the corporate actively monitors and reports on its derivative instruments.

5. Determine if the corporate is in compliance with authorities granted under Part 704, Appendix B, Part IV.

6. Initiate corrective actions when policies, procedures, practices, and internal controls are deficient.

ALM Examination Procedures

See Corporate Examination Procedures - Asset/Liability Management (OCCU 202P).

MBS & MDP Examination Procedures

See Corporate Examination Procedures - Asset/Liability Management (OCCU 202Pa).

Derivative Instrument Examination Procedures

See Corporate Examination Procedures - Asset/Liability Management (OCCU 202Pb).

Corporate Examination Questionnaire

See Corporate Examination Questionnaire - Asset/Liability Management (OCCU 202Q).

Appendices

202A Mortgage-Backed Securities and Mortgage-Derivatives Products

202B Derivative Instruments

References

1. NCUA Rules and Regulations (Section 704.8)

2. Regulatory Handbook, Thrift Activities (OTC) Volume II

Chapter 203

LOAN REVIEW

Introduction

Corporate credit unions (corporates) were initially created to provide liquidity resources to the natural person credit union (credit union) industry. Over time corporates have come to offer a wider array of products and services; however, they are still the primary source of liquidity and wholesale funding for most credit unions. Historically, risk within corporate loan portfolios has been considered low due to the small percentage of overall assets that loans represent, and due to the unique deposit structure of member credit unions where debt is considered senior to share deposits. However, given the key role that corporates play as a liquidity resource to member credit unions, it is imperative that corporates have effective policies and practices in place to ensure that funding is available to the membership, and that it can be provided in a manner that limits credit and liquidity risks to the corporate.

Lending activities of corporate credit unions are governed by Section 704.7 of the National Credit Union Administration (NCUA) Rules and Regulations (Regulations). Credit may be extended directly from the corporate to the borrower, or provided via pass-through and guaranteed loans from the Central Liquidity Facility (CLF) and the National Credit Union Share Insurance Fund (NCUSIF). In either circumstance, Section 704.7 sets forth specific limitations and responsibilities that corporates must adhere to when making loans to member credit unions and other borrowers.

Regulatory Requirements.

Section 704.7(a) requires that all corporates operate according to a lending policy which addresses, at a minimum, the following items:

1. Loan types and limits;
2. Required documentation and collateral; and
3. Analysis and monitoring standards.

Loans by corporate credit unions to other credit unions are exempted by Section 107a(c)(1)(B)(v) of the Federal Credit Union Act from the statutory and regulatory requirements imposed on business loans. However, Section 704.7 of the Regulations sets forth the following other limitations regarding corporate lending:

1. Loans to Member Credit Unions - Section 704.7(c)(1). The maximum aggregate amount in unsecured loans and lines of credit to any one member credit union, excluding pass-through and guaranteed loans from the CLF and the NCUSIF, shall not exceed 50 percent of capital. The maximum aggregate amount in secured loans and lines of credit to any one member credit union, excluding those secured by shares or marketable securities and member reverse repurchase transactions, will not exceed 100 percent of capital.

2. Loans to Non-Member Credit Unions - Section 704.7(d)(1). A loan to a credit union that is not a member of the corporate, other than through a loan participation with another corporate, is only permissible if the loan is for an overdraft related to the providing of correspondent services pursuant to Section 704.12. Generally, such a loan would have a maturity of only one business day.

3. Loans to members that are not credit unions - Section 704.7(c)(3). The aggregate amount of loans and lines of credit to one member, other than a credit union or corporate CUSO, shall not exceed 15 percent of the corporate's capital plus pledged shares. Any loan or line of credit made to a member, other than a credit union or a corporate CUSO, unless exempted by Section 723.1(b), must be made in compliance with Part 723 of Regulations, which governs member business loans, unless such loan or line of credit is fully guaranteed by a credit union, or fully secured by U.S. Treasury or agency securities. Those guaranteed or secured loans must comply with the aggregate limits of Section 723.16, but are exempt from other requirements of Part 723.

4. Loans to Corporate CUSOs - Sections 704.7(c)(2), (d)(2), and (e)(2). Loans to corporate CUSOs, whether members or nonmembers, are governed by Section 704.11. The aggregate of all investments in and loans (including lines of credit) to member and non-member corporate CUSOs cannot exceed 30 percent of the corporate's capital. However, a corporate may loan to corporate CUSOs an additional 15 percent of capital if collateralized by assets in which the corporate has perfected a secured interest under state law. (See Section 704.11(b)). Note that while NCUA's Rules and Regulations Section 704.7(e)(2) states that corporate CUSOs are not subject to Part 723 of regulations, this statement is made relative to loan limitations in Part 723, which are superseded by limits imposed by Section 704.11. Loans to corporate CUSOs are still subject to the due diligence requirements imposed on business loans by Section 704.11(c), which incorporate selected subsections of Part 723 by reference.

5. Participation Loans with Other Corporates - Section 704.7(f). Corporates may enter into loan participations with other corporates, contingent that each corporate retains at least 5 percent interest in the face value of the loan. A master participation loan agreement must be in place before the purchase or sale of the participation, and each participating corporate must exercise the same due diligence as if it were the originating corporate credit union. Corporates are allowed to participate in loans with natural person credit unions, but only if they have been approved for Part V Expanded Authority, or have requested and received a waiver permitting this activity. The limits established by the OCCU Director will govern this activity, and can be determined from the approval paperwork.

6. An analysis of the financial and operational soundness of the borrower, and the borrower's ability to repay, must be performed prior to loan approval. A corporate may assess prepayment penalties, if these are called for by the loan contract. When loans are issued to a corporate's natural person members, all consumer lending regulations will apply.

Types of Corporate Lending

Corporates offer a variety of loan products to their membership, including, but not limited to: overnight settlement loans, term loans, and secured and unsecured line of credit loans. While underwriting procedures and limitations may differ for each individual type of loan product, in all instances it is imperative that loan policies, practices, and personnel are effective in managing credit and liquidity risks.

CLF Loans

Corporates act as agents of the CLF through U.S. Central Credit Union. In this capacity member credit unions can gain access to a stable source of liquidity without the need to make a direct investment in CLF stock. CLF loans are primarily liquidity loans, and by law cannot be used to expand the investment and loan portfolios of the member credit unions. Any loans made as an agent of the CLF must meet the CLF's lending criteria. The corporate should maintain appropriate documentation evidencing the fact that the loan has been authorized and guaranteed by the CLF, and that these lending criteria have been met.

NCUSIF Guaranteed Loans

In certain situations loans may be disbursed with guarantees from the NCUSIF. This generally occurs when a natural person credit union is being liquidated or is subject to some other administrative type action. In any event, NCUA will guarantee repayment of the loan to the corporate. The corporate should maintain the appropriate documentation on file to evidence the loan guarantee.

Settlement Loans and Short-Term Liquidity Loans

The most common types of loans offered by corporates are settlement loans, short-term liquidity loans, and reverse repurchase loans. Term financing is less common, but term loans are a product that most corporates offer.

Normally, corporates will extend settlement lines of credit based upon the members asset size, anticipated needs, and ability to repay (i.e. financial strength). The line of credit will normally be used for both settlement and short-term funding shortages. The line may be "committed" (guaranteed) or "advised." A committed line of credit is always available to the member, while an advised line of credit is available at the discretion of the lender (corporate) at the time of the request. Normally, revolving lines of credit that require no advance notice by the borrower will carry a higher rate of interest than a credit line where advances must be requested and approved. This is indicative of the fact that the lender (corporate) will have the ability to decline the advised loan advance if, at that time of the request, a financial review indicates that the borrower's financial condition has deteriorated to the point where ability to repay is in question.

The decision to discontinue a member's settlement funding can have material financial and reputation repercussions to the corporate, the member credit union, and natural person members of the member credit union involved. A corporate should have preexisting procedures in place which address how to proceed with the settlement funding process when a member credit union has overdrawn its settlement line or otherwise presents increasing levels of credit risk. Such procedures should address offset of the loan balance by the member's other deposit accounts at the corporate, requirements for additional loan collateral, and involvement of alternative funding resources, such as investment repurchase arrangements and the CLF.

Short-term credit line loans may be secured or unsecured. Normally, secured lines will be priced at a lower rate of interest than unsecured lines, and are often committed lines, rather than advised lines.

When evaluating the ability to repay a settlement or short-term line of credit obligation, the major evaluation criteria should be the strength of the borrower's balance sheet and ability to generate funds inflows and/or convert assets to meet cash flow needs. Normally, these loans will be repaid via the settlement of cash letters and ACH deposits in transit, as well as normal cash flows received from loan amortizations and maturing investment balances. Therefore, liquidity of the members' receivables is crucial to the satisfaction of the obligation. In most instances settlement loans should carry a maturity of one day, while short-term line of credit loans normally should be retired within 12 months of the initial advance. Settlement and line of credit balances that remain outstanding for periods longer than those stated could indicate serious funds management deficiencies on the part of the borrower, or a misuse of the proceeds of the advance (i.e. using line of credit loans to fund long term consumer and real estate lending).

Reverse Repurchase Agreements

Corporates often enter into repurchase agreements with member credit unions where investments are "purchased" from members in order to provide the members with short-term cash funding. These repurchase transactions are accounted for in a manner very similar to a secured loan. In a typical repurchase transaction the corporate will extend a loan advance to the member credit union. The loan is "secured" by investment securities owned by the member credit union.

The corporate receives a "fee" which is represented as the difference between the agreed upon price of the securities as of the day of the settlement date of the transaction and the agreed upon future repurchase price. Normally, a margin of at least 102 is required to adequately secure this type of lending transaction; however, this margin requirement should be increased if the securities taken as collateral exhibit high volatility or price risk. It is imperative that the corporate have appropriate internal controls in place to determine the market value of collateral on a daily basis, and that the collateral obtained is a legal investment for corporate credit unions pursuant to Section 704.5.

Term Loans

Term loans are normally used to fund long-term capital expenditures or product offerings for member credit unions and affiliated organizations. The repayment of term financing is heavily dependent upon the long-term financial strength of the borrower; therefore, the lender should not only focus upon the ability of the borrower to generate a short-term cash flow, but also review long-term earnings capability.

Normally, term loan advances will be secured with specific fixed assets, investment securities, or loan receivables. The effective securitization and valuation of these assets is crucial in managing credit risk on a term loan advance.

Participation Loans

Participation lending is allowed under Section 704.7. Participation with other corporates on loans is presently uncommon, but some corporates have shown interest in participation lending, and this could be a service that is offered more frequently in the future.

If a corporate is participating with other corporates on loans, the examiner should ensure compliance with all the requirements of Section 704.7(f), and that the same due diligence was required on the participation loan that is required on all other loans originated by the corporate. The examiner should review the file, including the credit analysis process, security agreements, and participation agreement. If there is extensive activity in this area, the examiner should review a loan sampling of sufficient size and scope to determine the adequacy of the corporate's practices and procedures for each type of loan participation being entertained, and the level of risk each presents.

Lending Risk Assessment

Since loans typically comprise a small percentage of a corporate's total assets, the extent of review of individual loan files will be determined by the EIC. The main focus of the loan review is to determine if the corporate has detailed policies and procedures for all types of loans offered, and that these are being followed in actual practice.

If information developed during the review of policies and procedures reveals a serious problem, the examiner has the option of expanding the review of individual loans as necessary to identify the extent of the problem and the corrective actions required. Reasons for expanding or contracting the loan review will be discussed in the Corporate Examiner Memorandum for Lending and in the confidential section of the report. Regardless of the size of the loan review, serious problems will normally require development of a Document of Resolution to resolve them.

Written Lending Policies and Procedures

Section 704.7(a) requires that all corporates maintain written lending policies. Written policies and procedures should be commensurate with the volume and complexity of the corporate's lending program.

The board-approved policies should establish general risk limitations and authorizations regarding the corporate's lending function. Written procedures should detail the corporate's loan underwriting, monitoring, and reporting practices. Policies should also be specific as to collateral requirements, and procedures should be in place for valuing collateral taken as security on loans.

The examiner should review all written policies and procedures to determine that they adequately set forth restrictions, limitations, and appropriate internal controls over the lending function. The examiner should determine that written policies and procedures are periodically reviewed and revised as economic, competitive, and market changes dictate. The written policies and procedures should provide for sound credit risk and liquidity management, while also ensuring a competitive lending function for the corporate.

In general, the examiner should determine that the written policies and procedures:

1. Identify the types of loan products that the corporate will offer. The policies and procedures should include the specific characteristics, limitations, and underwriting requirements for each loan product (e.g. security requirements, cash flow requirements, pricing).

2. Specify how the value of acceptable types of collateral will be determined and subsequently monitored, and identify the process needed to adequately perfect security interests in such collateral.

3. Identify the specific terms and maturities of different types of loan products. Repayment terms should ensure amortization of loans sufficient to meet the funding needs of the corporate. Repayment terms should also be related to any expected declines in collateral value, and the overall cash flows of the borrower.

4. Require that all loan terms be set in a written lending agreement between the corporate and the borrower, which, for loans other than lines of credit, should be sufficient to retire a note within 12 years.

5. Contain loan pricing strategies that comply with statutory interest rate limitations.

6. Identify management and staff members responsible for underwriting loan requests, and their approval authorizations.

7. Are consistent with the corporate's ALM and funds management objectives. Examiner staff should determine that loans are being advanced with the profitability and liquidity needs of the corporate in mind.

8. Identify specific guidelines by which the borrower's credit worthiness will be assessed. This will include a listing of key financial ratios that will be evaluated. Policies and procedures need to specifically identify thresholds of acceptable financial and statistical data and trends.

9. Provide for periodic compliance reviews independent of the lending function. A periodic compliance review or audit of the lending policies and practices should be required in order to determine the effectiveness of the policies and procedures, as well as lending staff's adherence to the policy requirements and objectives. This requirement may be found in internal audit or other policies, if not specified in the lending policy.

10. Establish requirements for identifying delinquent loans, loan classifications, and "watch list" preparation and maintenance.

Loan Underwriting Procedures and Documentation

The corporate should make an assessment of the financial and capital strength of the borrower. Adequate procedures must also be in place to securitize and value assets taken as collateral on loans so that they may be converted to appropriate cash flow in the event of a default.

The examiner must ascertain that the corporate has performed the appropriate due diligence to determine the ability of the borrower to repay the debt, and that this analysis is periodically updated throughout the life of the loan or line of credit.

As part of the lending review, the examiner should determine that corporate management is taking adequate measures to continually assess the borrower's financial strength. The ability of loan officers to determine the financial strength of prospective borrowers is crucial in managing credit, interest rate, and liquidity risk on both secured and unsecured lending transactions.

Financial Analysis

The examiner should determine that the loan officers are performing and documenting a sound financial analysis of borrowers. Financial ratios that may be used to determine the solvency, earnings potential, and liquidity of potential borrowers include, but are not limited to:

Solvency Ratios:

1. Capital/Total Assets;
2. Net Capital/Total Assets; and
3. Debt/Capital.

Earnings Ratios:

1. Net Income/Average Assets;
2. Operating Expenses/Average Assets;
3. Net Interest Margin/Average Assets;
4. Fee Income/Operating Expenses; and
5. Net Loan Losses/Average Loans.

Liquidity Ratios:

1. Current Assets/Current Liabilities;
2. Delinquent Loans/Total Loans; and
3. Long Term Assets/Total Assets.

The examiner should determine the corporate is using proper financial analysis tools to evaluate specific types of loans. When evaluating a long-term secured loan, the loan officer must determine that the member demonstrates adequate capital and long-term earnings ability. In addition, current and future value of collateral taken as security must be evaluated. The ability to convert collateral to cash must also be verified by the loan officer.

The examiner should determine the loan officer initially evaluated at least three years of the borrower's financial performance to estimate the credit union's or affiliated organization's financial strength and liquidity. This analysis should be updated periodically throughout the life of the loan (please refer to Ongoing Monitoring, below).

The examiner also should be aware that the corporate will have some knowledge of the borrower's management team, and therefore, may be able to make subjective assessment of their skills in managing the financing of the credit union's assets. Any subjective assessment should be detailed in the loan officer's credit review. Financial ratio and credit analysis should be undertaken on, at least, an annual basis, with more frequent reviews performed for active lines of credit, large concentrations, and "watch list" loans.

Review of Independent Audit Reports

A valuable tool in assessing the financial condition and internal control structure of the debtor is the independent audit report. Corporate loan policies should require that a copy of each borrower's independent audit report, including any management letter, be obtained on an annual basis. The audit may often disclose internal control, management, and operational deficiencies that could be material in the decision to grant credit.

Collateral Analysis

Corporates often extend loans to member credit unions and other affiliated organizations that are secured by specific assets. In many cases corporates have required that a "blanket" lien be placed on all the assets of a credit union entering into a line of credit agreement with the corporate. When filing a blanket lien the corporate does perfect a security interest. However, without also making a determination as to specific assets to be secured, and determining lien position as to those assets, the corporate may not be gaining much collateral value.

When an examiner is making a determination as to the validity of security interests, it is important to ensure that the corporate has practiced appropriate due diligence in perfecting a security interest, and ensuring a first position on assets identified as collateral. If these aspects of collateralization cannot be confirmed, the loan should be considered unsecured.

In instances when a blanket lien is filed out of "an abundance of caution" in conjunction with a sound ability to repay on an unsecured transaction, the examiner should not be overly critical of the corporate's collateral interests. However, in instances when collateral is deemed critical to reducing credit risk on the loan, the examiner should determine that the corporate has taken sufficient action to perfect a valid security interest in the collateral, and determine that the value of collateral is sufficient to securitize the loan balance.

In most cases collateral on corporate loans falls into five different categories:

1. Member share deposits;
2. Members' investment securities;
3. Commercial real estate;
4. Interests in member credit union loan portfolios; and
5. Other tangible assets.

In order to perfect valid security interests in each type of asset, specific steps must be taken as to documentation, legal filings, and overall due diligence.

The three requirements for the creation of a security interest are stated in the Uniform Commercial Code (UCC) Section 9-203. Once the following requirements are met, the security interest attaches:

1. The collateral is in the possession of the secured party pursuant to agreement, or the debtor has signed a security agreement that contains a description of the collateral;
2. Value has been given to the debtor; and
3. The debtor has rights to the collateral.

Thus, unless collateral is in the possession of the secured party, there must be a written security agreement that describes the collateral. The description need not be very specific or detailed as long as it reasonably identifies the collateral. It is most important that the creditor files appropriate documentation with applicable state authorities, and that a lien search is performed to determine that no other creditors have prior interest in the assets secured. The examiner may need to consult state laws regarding the perfection of security interests, to determine that the corporate has adequately secured its position in any assets collateralizing a loan. The corporate should maintain a written legal opinion regarding the legality of all forms used The opinion should provide assurance that the corporate's procedures for securing interests in collateral whether it be deposits, investment securities, real estate, loans, or other tangible assets, is adequate and legally binding.

In the instance where a loan is secured by shares deposited in the corporate, the perfection of the security interest is achieved via the security agreement entered into with the member and the Statutory Lien Provisions set forth in the Federal Credit Union Act. The corporate's possession of the cash accounts provides a "perfected" interest in the accounts according to the UCC provisions listed above.

In the event that a corporate extends credit secured by cash not on deposit at the corporate, a lien search should be performed, and a UCC-1 filed with the appropriate state authorities identifying the cash accounts that were being encumbered as security on the loan. It is also recommended that the institution holding the deposit acknowledge the corporate's interest in the collateral.

Ongoing Credit Review

A credit review should not end with the review of the initial credit application. Corporates issue commercial credit, repayment of which is heavily dependent upon the borrower's ability to maintain financial strength through changing economic and competitive conditions. The examiner should determine that the corporate's lending policies and practices provide for an effective program of ongoing credit analysis of borrowing members and affiliates.

Credit reviews, including an evaluation of financial, statistical, and organizational information, should be completed for each borrowing institution on at least an annual basis. More frequent reviews should be initiated depending upon the type of credit issued, fluctuation in value of collateral, amount of dollars outstanding, frequency of advances on credit lines, and the financial condition of the borrower.

All credit reviews should be documented, and evidenced by a loan officer's written assessment as to the financial and operational stability of the debtor. Many corporates enlist the services of third party data aggregators who compile various ratios based on NCUA 5300 Call Report information. Such analytical information can have value, but, standing alone, it is not sufficient to establish the corporate's due diligence. The credit review must establish the scope of the analysis, and loan officers should document in narrative format the rationale behind conclusions for increasing, decreasing, or merely maintaining an open credit line. If the examiner deems that initial and ongoing credit reviews are not adequately verifying the debtor's financial condition and ability to repay, then a finding and record of action should be provided in order to facilitate corrective action.

Examination Objectives

The objectives for reviewing a corporate's lending program are as follows:

1. Determine the degree of credit risk exposure inherent within the corporate's lending program, in relation to its capital position.

2. Determine the adequacy of policies, practices, procedures, and controls regarding loan portfolio management, in relation to current market and economic conditions.

3. Determine if corporate staff are processing loans within policies and procedures.

4. Determine compliance with applicable laws, rulings, and regulations.

5. Determine if members are treated equitably during the implementation of the corporate's lending policies, practices, and procedures.

6. Determine if timely corrective actions are initiated when policies, practices, procedures, or controls are deficient, or when violations of laws or regulations are noted.

Examination Procedures

See Corporate Examination Procedures - Loan Review (OCCU 203P).

Examination Questionnaire

See Corporate Examination Questionnaire - Loan Review (OCCU 203Q).

References

1. Commercial Bank Examination Manual, Board of Governors of the Federal Reserve

2. Regulatory Handbook, Thrift Activities, Office of Thrift Supervision

3. Examiner's Guide, National Credit Union Administration

4. Comptroller's Handbook for National Examiners

Chapter 308

COMPLIANCE

Introduction

During each examination, examiners will review the corporate credit union's (corporate) compliance with regulations promulgated by NCUA and other agencies. Violation of the laws, statutes, regulations, and sound business practices must be disclosed in the examination report and on OCCU Form 102F, the Document of Resolution.

In this chapter, various Part 704 compliance issues are referenced. More specific information can be obtained in the applicable chapters, as noted with the specific reference. Where there is no specific chapter for a compliance issue, the items are discussed herein.

Section 704.3 - Corporate Credit Union Capital

See Chapter 204, Capital and Appendix A to Part 704—Model Forms.

Section 704.4 - Board Responsibilities

See Chapter 301, Management.

Section 704.5 - Investments

See Chapter 201, Investments and Appendix B to Part 704- Expanded Authorities and Requirements.

Section 704.6 - Credit Risk Management

See Chapters 201, Investments, and 202 Asset and Liability Management.

Section 704.7 - Lending

See Chapter 203, Loan Review.

Section 704.8 - Asset and Liability Management

See Chapter 202, Asset and Liability Management.

Section 704.9 - Liquidity Management

See Chapter 202, Asset and Liability Management.

704.10—Investment Action Plan

See Chapter 201, Investments.

704.11--Corporate Credit Union Service Organizations (CUSOs)

See Chapter 311, Corporate Credit Union Service Organizations.

704.14—Representation

Each examiner must ensure that the board of directors is in compliance with all phases of this section which addresses interlocks, representatives of organizational members, recusal provisions, and administration.

704.15-- Audit Requirements

See Chapter 309, Supervisory Committee/Audit Functions.

704.16 Contracts/Written Agreements

See Chapter 301, Management.

704.18 Fidelity Bond and Insurance Coverage

See Chapter 310, Bond and Insurance Coverage.

704.19-- Wholesale Corporate Credit Unions

Wholesale corporates are subject to all sections of Part 704, except for in this section it is subject to a different determination of earnings retention factor and threshold for notification of the board of directors, supervisory committee, and the OCCU Director.

Charter and Bylaws

Examiners will review the corporate's charter and bylaws to determine if the corporate is operating within its limitations.

Operating Fees

Examiners must ensure that each Federal corporate is in compliance with Section 701.6. This section states that each year or as otherwise directed by the NCUA Board, each Federal credit union shall pay to the Administration for the current NCUA fiscal year (January 1 to December 31) an operating fee. This fee will be in accordance with the schedule fixed from time to time by the NCUA Board, based on the total assets of each Federal credit union as of December 31 of the preceding year, or otherwise determined pursuant to paragraph (b) of this section.

Share Insurance

During each examination of a federally insured corporate, examiners must review the National Credit Union Share Insurance Fund (NCUSIF) account for accuracy. Errors detected must be documented in the examination report along with corrective actions taken.

Security Devices

Part 748 establishes minimum security standards and procedures for credit unions. The examiner should determine that the corporate has (1) established adequate security programs in accordance with the regulation, and (2) updates the program to reflect operational changes.

Corporate credit union management must provide adequate safeguards to:

1. Protect the credit union from robberies, burglaries, larcenies, and embezzlement;
2. Protect the credit union from theft of data and disclosure of confidential member information;
3. Assist in identification of persons who commit or attempt such actions and crimes; and
4. Prevent destruction of vital records (as defined by Part 749 of the NCUA Rules and Regulations).

The corporate's security program must include administrative, technical, and physical safeguards appropriate to the size and complexity of the institution and the nature and scope of its activities. At a minimum, corporate management should design and implement a comprehensive written security program to:

1. Identify key controls, systems, and procedures;
2. Assess internal and external threats;
3. Assign responsibilities;
4. Establish security procedures consistent with operating systems;
5. Provide for periodic training of all employees;
6. Protect against destruction, loss, or damage of information, and develop recovery procedures;
7. Ensure periodic testing of security programs;
8. Re-assess threats and the adequacy of controls;
9. Review monitoring systems and control procedures; and
10. Revise strategies.

Examiners will evaluate management's efforts to identify, assess, measure, mitigate, and monitor risks.

Examination Objectives

The objectives for reviewing the compliance area are:

1. Determine that the corporate's policies, procedures, practices, and internal controls of all aspects of compliance not specifically covered by other chapters of this Guide are reviewed to determine the risks associated with those activities;

2. Determine that all reports required of corporates are filed accurately and timely;

3. Determine that the National Credit Union Share Insurance Fund and NCUA operating fees, where applicable, are accurate and paid on time; and

4. Initiate corrective action when the policies, procedures, practices, or controls are deficient or when violations of laws or regulations are noted.

Examination Procedures

See Corporate Examination Procedures - Compliance (OCCU 308P).

Examination Questionnaire

See Corporate Examination Questionnaire - Compliance (OCCU 308Q).

References

1. NCUA Rules and Regulations, Part 704

2. NCUA Rules and Regulations, Section 701.6

3. NCUA Rules and Regulations, Part 748

4. NCUA Website/Reference Information/Letters to Federal Credit Unions and Letters to Federally Insured Credit Unions

5. Chapter 18 (Regulatory Compliance) of the natural person credit union Examiner's Guide

6. Appendix 18A (Bank Secrecy Act) of the natural person credit union Examiner's Guide

7. Corporate Credit Union Guidance Letter No. 2004-02, June 2004, BSA Compliance Guidance

Chapter 309

SUPERVISORY COMMITTEE/AUDIT FUNCTION

Introduction

Duties and Responsibilities

The Supervisory Committee (committee) is responsible for the annual audit, the verification of members' accounts, the internal audit function, and to oversee board of directors (board) or other issues which may impact the corporate credit union (corporate). Included in such issues is the monitoring of follow-up on open audit and examination findings until they are resolved. Committee members must be bondable.

Part 704 of the NCUA Rules and Regulations notes that, to the extent they are not inconsistent with Part 704, other regulations applicable to federally chartered or insured credit unions apply to corporates as well. Part 715 imposes a duty on committees to determine that policies and control procedures are sufficient to safeguard against error, conflict of interest, self-dealing, and fraud. This means that corporate committee members must possess sufficient expertise in corporate operations to independently evaluate the adequacy of internal and external audit work in relation to the sophistication of the corporate's current and planned activities. The committee members should also possess the ability to determine if augmentation of industry standard internal and external audit scopes needs to take place, and whether supplemental audits should be performed in specific areas.

Part 704 Guidance Letter No. 2, issued August 12, 1997, imposes additional duties on corporate committees with expanded authority. Such committees must consider the need for and timing of an external risk management review function which will test the reliability of models and systems employed by management to determine the level of risk the corporate is taking. Factors to be considered include the current known level of risk being taken, the status of the corporate's models and systems relative to the state of the art, the levels of knowledge and technical expertise exhibited by staff, and recommendations of auditors and examiners.

Because of the complexity of corporate operations, it is not unusual for the committee to work closely with management in development of the corporate's internal audit program and in determining the necessity of third party risk management reviews. However, the committee must clearly demonstrate independence in decision-making in these areas, and in all other areas of committee responsibility. Documentation in

support of such independence should be present in committee meeting minutes, and in written committee procedures for the auditor evaluation and selection processes, internal audit scope determinations, and other areas of committee responsibility where written standards and guidance are appropriate. If no such documentation exists, the corporate examiner (examiner) should recommend that it be developed and maintained. If there are any questions as to the committee's independence, this should be discussed with the Corporate Field Supervisor (CFS).

CPA Opinion Audit Required

Section 704.15 of the NCUA's Rules and Regulations requires corporates to obtain annual opinion audits from an independent, duly licensed certified public accountant (CPA). This audit must be performed in accordance with generally accepted auditing standards and the audited financial statements must be prepared consistent with generally accepted accounting principles (GAAP), except where law or regulation provides for departure from GAAP (e.g. classification of shares). The committee shall submit the audit report to the board. A copy of the audit must also be submitted to NCUA within 30 calendar days after its receipt by the board. A summary of the audit report shall be submitted to the membership at the next annual meeting. The summary audit report is often incorporated in the corporate's annual report.

Upon submittal to NCUA, the annual audit report is generally sent to the district examiner for review. If the examiner in charge (EIC) is not the district examiner, he or she should review the audit report and management letter for items relevant to the examination.

If a management letter is not issued, the corporate should obtain a letter from the CPA firm confirming that conditions did not warrant issuance of a management letter.

Other industry standard audit-related correspondence should also be reviewed. Such correspondence includes the audit engagement letter, representation letters issued by corporate management and corporate counsel, and the CPA firm's independence letter. If these letters are missing, or if they contain language out of the ordinary, the reasons for this should be investigated.

Scheduling the Review of the Audit Work Papers

Part of the pre-examination process includes sending a pre-examination letter to the corporate. Scheduling review of the audit work papers is coordinated through this letter. Typically, the EIC will review the audit and verification work papers during the pre-examination week. Communicating the results of the audit work paper review to the committee chairperson is recommended.

Section 704.15(b) requires that, if requested, audit work papers are to be made available for NCUA's review. Despite this regulatory requirement, some auditing firms have requested that examiners sign a release statement before the firm will provide the documents to NCUA. Examiners are not required to honor, nor should they honor, this request. If the auditor continues to deny access to the work papers, the examiner should notify the CFS. The notification should include the name and address of the auditing firm, as well as the name of the applicable partner. The CFS will provide the information to the Director, OCCU, who will send a letter to the auditing firm citing the regulatory requirement that work papers be made available.

If the auditing firm continues to deny access to the work papers, the corporate's committee chairman should be notified of the problem. It is the ultimate responsibility of the committee to ensure that the corporate is in compliance with the audit requirements of the regulation.

Sarbanes-Oxley Act of 2002 (H.R. 3763)

This legislation was enacted in response to several recent corporate governance scandals, examples being Enron and Global Crossing. This Act's requirements currently apply only to public companies, but there have been initiatives made toward expanding applicability to include financial institutions not currently covered by the Act's language. Corporate credit unions could then become subject to this Act.

Until such changes have been made, examiners should encourage the committee members to familiarize themselves with all the Act's requirements, and encourage the committee to voluntarily adopt those provisions which are consistent with sound business practices.

Examples of such actions might include:

1. Requiring an inquiry as to whether the CPA firm being considered for the audit engagement has registered with the Public Company Accounting Oversight Board, and whether it has ever been sanctioned by this body;

2. Requiring audit partner rotation; and
3. Establishment of a confidential employee "whistleblower" and member complaint handling process.

NCUA Letter 03-FCU-07 provides a summary of those sections of the Act which may have relevance to corporate credit unions. Committee members should be expected to be familiar with the contents of this letter.

Review of Annual Audit

The review of the annual audit is an important step in the examination process. The quality of the work and cited conclusions can be a factor in determining the scope of the examination. A comprehensive audit, qualified only with respect to the classification of member shares as equity, can give the examiner added basis for confidence in the accuracy and reliability of the corporate's records. This confidence can limit the extent or scope of selected reviews. Conversely, an inadequate audit may cause the examiner to expand the examination's scope.

An audit is the critical and systematic examination of the financial statements, records of accounting transactions, and internal controls of the institution. An acceptable audit is one that satisfies the requirements of each particular case when judged by professional standards of performance.

It is not possible to define exact standards of acceptability for all corporate credit union audits. The examiner must use professional judgment to determine whether the audit fulfills all required elements. At a minimum, the audit report must meet the requirements of Part 715 of the NCUA Rules and Regulations, to the extent these are not inconsistent with corporate credit union requirements set forth in Section 704.15.

If the audit disclosed areas that indicate material operational or financial weaknesses, the external auditor should do more than merely certify the numbers. If the examiner concludes that the audit does not adequately address all concerns, the situation will first be discussed with the CFS prior to discussion with the committee and the board. Moreover, the examination report will contain appropriate verbiage to reflect the nature of these discussions.

Guidance on auditing standards that must be met can be found in the AICPA's *Audits of Credit Unions*. However, there may be cases in which minimum standards are not adequate to evaluate the specific services or circumstances in a particular corporate. Based on the risk

exposure and other circumstances in each corporate, the examiner must judge if an audit fulfills the regulatory requirements.

An examiner should consider an audit unacceptable if:

1. Material parts of the audit were not performed;
2. Material parts of the audit cannot be supported by work papers; or
3. Material areas of the corporate's operations were left unaudited.

When an examiner takes exception to the annual audit, the following information should be provided to the corporate and documented in the examination work papers:

1. Specific audit sections in question;
2. Records or accounts with significant errors or record keeping deficiencies;
3. Material area(s) unreviewed; and
4. Time anticipated to resolve the problems.

If an examiner cannot determine if the CPA adequately completed certain audit steps, or questions the CPA's independence or competence, the concerns should be discussed with the CPA. During the meeting, the examiner should determine if and how the CPA used additional audit steps. At this time, however, the examiner should not make any statements as to the acceptability of the audit, if, in fact, it is deemed to be unacceptable.

Examiners must maintain their objectivity and independence. They should reserve adverse comments for the final meeting with the committee. The examiner should explain the audit deficiencies to the auditor and provide the auditor an opportunity to comment. If the auditor agrees, the parties involved should reach agreement concerning what and when corrections will be made. In all cases, examiners will discuss major audit findings with the committee and document them in their examination work papers.

If the examiner cannot come to an agreement with the CPA on the deficiencies, the CFS should be contacted. The examiner should not rate the audit as unacceptable. NCUA must afford the independent accountant "due process." For NCUA to prevail in a due process proceeding, OCCU staff must document that the CPA did not present financial statements consistent with GAAP, or that the CPA did not perform the audit scope, procedures, testing, and reporting consistent with GAAS.

When NCUA deems a CPA's work unacceptable, examiners have several options:

1. Recommend that the committee cause to be performed the additional necessary tests, within an appropriate timeframe before the next examination, to provide NCUA with needed assurance;
2. Recommend to the board and the committee that they include additional special procedures in the engagement letter in future audits; or
3. Recommend the agency enforce appropriate FIRREA actions, as deemed necessary.

If the issue cannot be resolved with the corporate and the committee, the CFS should consult with the OCCU Director to determine how the concern should be advanced to the Office of Examination and Insurance (E&I) and the Office of General Counsel (OGC). If the examiner, CFS, and OCCU Director are in concurrence, the examiner should consider the CPA's work "pending further review" until judged to be either acceptable or unacceptable. Examiners will not require the corporate to have another CPA redo the work unless the OCCU Director instructs such action.

To facilitate the submission to E&I and OGC, the examiner should provide the following:

1. A memorandum summarizing the complaint, accompanied by documentation supporting the examiner's position. The memorandum should be clear, concise, and fully supported by documentation that is sufficient for the state licensing authority, the AICPA Ethics Division, or NCUA through an administrative proceeding process, to track the facts and successfully draw the same conclusion as the examiner;
2. A copy of the credit union's engagement letter, management representation letter, and any other relevant contracts or correspondence with the CPA firm;
3. A copy of the examination report;
4. A copy of the audit report;
5. A description of the examiner's review regarding the CPA's work, the audit report, and the CPA's working papers in determining inadequacy;
6. Documentation regarding attempts to bring resolution of the inadequacies with the CPA;

7. A listing of the examiner's findings and exceptions provided to the committee, and any notes, minutes, transcripts, or recordings of the meeting held with it to discuss same; and
8. Any additional information or documentation evidencing the examiner's position, and which would persuade a reasonable person in a due process proceeding.

The prepared package will be forwarded to E&I to review, assess the merit of the case, and possibly enhance NCUA's position by adding appropriate references or language from account literature (GAAP and GAAS), if needed. In some cases, E&I has been successful in initiating renewed dialogue with the CPA, which brings about resolution of the issues. However, if E&I is unsuccessful, OCCU will forward the package to OGC which will consider the possible courses of action, which include:

1. Referral to the state licensing authority;
2. Referral to the AICPA Ethics Division;
3. Prohibition action (in rare cases), if OGC can prove the grounds set forth in Section 206(g) of the FCU Act in an administrative hearing;
4. Cease and desist order (in rare cases) against the CPA for violation of law or regulation, or for committing an unsafe or unsound practice;
5. A civil money penalty (in rare cases) against the CPA for violating law or regulation; and/or
6. Cease and desist or civil money penalty actions against the credit union or its officials for failure to obtain an "acceptable" audit.

OCCU and the central office staff must work together to advance the case through the legal system to seek the appropriate resolution. At all stages of this process, all parties must understand the importance of good communication and feedback. Examiners should feel comfortable to raise such cases through the established channels, confident that, in documented cases with merit, OCCU and central office staff will seek out and pursue an acceptable resolution.

Auditor's Review of Internal Controls

During the analysis of the auditor's work, the examiner will pay particular attention to the internal controls and operational procedures review. If the audit does not include a review of internal controls in major areas such as wire transfers and/or investments, discussion with

the supervisory committee will emphasize the need to obtain an internal control audit covering these risk areas. Deficiencies will be addressed in the executive summary, as appropriate.

Status of Auditor's Exceptions/Recommendations

The Corporate Examination Questionnaire - Supervisory Committee, OCCU 309Q, and/or a suitable examiner designed work paper, will be used to list all exceptions/recommendations noted by the auditor in the audit report or management letter. A copy of these reports may be attached to OCCU 309Q in place of the required explanation. Steps taken by management to correct any of the noted exceptions and/or to implement auditor recommendations, and the current status of the corrections/recommendations, must also be documented.

Internal Audit

A corporate with average daily assets in excess of $400 million for the preceding calendar year, or as ordered by NCUA, must employ or contract, on a full- or part-time basis, the services of an internal auditor (Section 704.15b). The internal auditor's responsibilities will, at a minimum, comply with the Standards and Professional Practices of Internal Auditing, as established by the Institute of Internal Auditors. The internal auditor will report directly to the chair of the committee, who may delegate administrative supervision of the internal auditor's daily activities to the corporate's CEO. The internal auditor's reports, findings, and recommendations will be in writing and will be presented to the committee not less than quarterly.

Although not required by Section 704.15, corporates with assets less than $400 million typically have internal audit functions. This is due to the risks posed by selected corporate operations (e.g., wires, etc.), regardless of asset size.

The committee and/or internal audit staff must develop an internal audit program which sets the frequency and scope of each internal audit. Examiners can provide input/guidance to the committee and the internal audit staff. However, such suggestions are usually limited to situations wherein there are deficiencies in internal audit scope (e.g., areas presenting material risk are not being audited), internal audit procedures (e.g., lack of follow-up procedures), or when the frequency of internal audits is inadequate. Internal audit scopes should be geared

toward a targeted risk approach, such as NCUA's targeted risk examination approach.

Examination Objectives

The objectives of the supervisory committee and audit function review are to:

1. Determine that all regulatory audit requirements are being met;
2. Evaluate the effectiveness of the committee through review of its audit implementation and oversight processes;
3. Evaluate the independence and competence of those who provide the internal and external audit functions, and the overall adequacy of the internal audit function;
4. Determine the procedures performed by the internal and external auditors are adequate to identify and to prompt the correction of deficiencies representing material risk;
5. Evaluate the adequacy of the annual opinion audit and verification of members' accounts, relative to the corporate's needs;
6. Determine that areas of concern noted during the external and/or internal audits are followed up by the committee or internal audit staff for corrective action; and
7. Initiate corrective action (issuance of DORs and/or OEFs) when deficiencies are identified with either the committee, the annual audit process, or the internal audit staff/processes.

Examination Procedures

See Corporate Examination Procedures - Supervisory Committee (OCCU 309P).

Examination Questionnaire

See Corporate Examination Questionnaire - Supervisory Committee (OCCU 309Q).

References

1. Federal Credit Union Act, Section 115, Supervisory Committee; powers and duties; suspension of members; passbook (12 CFR Section 1761d);

2. NCUA Rules and Regulations, Sections 704.15 (Audit Requirements) and 715 (Supervisory Committee Audits and Verifications);
3. AICPA Audit and Accounting guide, Audits of Credit Unions;
4. NCUA's Examiner's Guide, Chapter 5, Supervisory Committee; and
5. NCUA Letter No. 03-FCU-07, the Sarbanes-Oxley Act.